



**Human resource development and training of
primary health care practitioners for quality
information management: the case of the North
West Province Department of Health**

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ABSTRACT

Poor data quality can have a substantial influence on quality information management. Although departments such as the Department of Health are improving data quality with the development of the District Health Management Information System Policy and standard operating procedures, their improvement efforts tend to focus narrowly on ensuring that data is captured accurately on the Web District Health Information System. The main objective of this study is to determine the human resource development and training needs of primary health care practitioners responsible for quality information management. The study describes the statutory and regulatory framework for health services in South Africa. A literature review of human resource development and training, as well as quality information management, is provided. Definitions of these concepts are presented to provide an important conceptual background. The current challenges in terms of ensuring quality information management, along with the development and training needs of primary health care practitioners for quality information management in the North West Department of Health, are analysed. Data was gathered through semi-structured questionnaires administered to the target population who are primary health care practitioners including medical doctors, dentists and professional nurses.

This study captures dimensions of data quality that are important to quality information management including accuracy, consistency, timeliness, completeness, accessibility, objectiveness and relevance. A consistent and holistic continuous training approach, which involves all employees responsible for quality information management, is important when incorporating the organisational functions. The study concludes by making recommendations pertaining to the human resource development and training of primary health care practitioners for quality information management.

KEYWORDS

Information management, development and training.

LIST OF ABBREVIATIONS USED IN THIS STUDY

AAA	American Accounting Association
AGSA	Auditor General of South Africa
CCMDD	Central Chronic Medicines Dispensing and Distribution
CHC	Community health centre
CPR	Cardio pulmonary resuscitation
DHIS	District health information system
DHMIS	District health management information system
DHS	District health system
DOH	Department of Health
FET	Further Education and Training
HPCSA	Health Professionals Council of South Africa
LRA	Labour Relations Act
ICT	Information communication technology
IT	Information technology
MEC	Member of the executive council
MMC	Male medical circumcision
NDP	National Development Plan
NQF	National Qualifications Framework
NWDOH	North West Department of Health

NWU	North West University
PERSAL	Personnel and Salary System
PHC	Primary health care
PFMA	Public Finance Management Act
POPI Act	Protection of Personal Information Act
QCTO	Quality council for trades and occupations
RSA	Republic of South Africa
SANC	South African Nursing Council
SETA	Sector education and training authorities
TB	Tuberculosis
Tier.net	Electronic Anti-retroviral therapy registers

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CHAPTER 1: OUTLINE OF AND BACKGROUND TO THE STUDY

1.1 INTRODUCTION

This study was conducted in order to conceptualise the human resource development training requirements of primary health care practitioners in relation to ensuring quality information management for the North West Department of Health. This chapter includes an orientation which describes what information management is in relation to interpreting the organisational data, as well as employee participation in the purposeful organisation of this data into reliable and accurate information. The chapter furthermore provides the context within which information management is necessary and the legislation which governs it for the purpose of quality information management. The chapter outlines the problem statement central to the study, and also details the research methodology followed in the collection and analysis of data, in order to answer the proposed research questions. The chapter concludes with an outline of the study.

1.2 ORIENTATION AND PROBLEM STATEMENT

Information management is defined by the Business Dictionary (2016) as the acquisition and management of information from one or more sources in an organisation, the custodianship and the distribution of that information to one or more audiences who have a stake in it, or a right to that information, and its ultimate disposition through archiving or deletion. Information management further involves the collection of data from the primary source documents from where data is generated, the application of management techniques to capture data (such as using the Web District Health Information System for the purpose of this study) and to transform raw data into information in order to communicate within and outside the organisation (Business Dictionary, 2016).

The necessity for information management is largely based on the fact that individuals and organisations rely on their ability to select and process reliable information, in order to make sense of their local environment and to understand the bigger picture as it underpins the key organisational activities of planning the work, taking actions to

accomplish the goals, analysing challenges and problems, making decisions, responding to the needs of customers and, above all, to influence organisational learning and development (Hoke, 2011:28). Learning generally occurs when information is used to justify the operations of the organisation, the need for change, the need for creativity, or a new situation to draw meaningful, accurate decisions and conclusions (Cahoy, 2013:147).

Furthermore, information management is vital in order to ensure informed decision making and to carry out tasks related to the strategic management of the organisation (Barnes & Barnes, 2012:40). Information management is also a requirement for creating awareness of particular member responsibilities involved in implementing the strategic goals and objectives of the organisation (Nooraie, 2012:407). Ultimately information management is used as the source of knowledge regarding the outcomes of the actions undertaken in organisations (Bytheway, 2014:26).

In this study, the focus is on ensuring that health care practitioners are appropriately trained and developed to facilitate the quality internal analysis of the information generated by the organisation itself, as a result of its activity. The words *data* and *information* are used sequentially, since data refers to unprocessed figures without interpretation or scrutiny required to build information (Tremblay, Roberge & Berbiche, 2006:3). Consequently, data should be accurate in order to ascertain the production of precise, valid and reliable information (Morgan & Waring, 2004:1). Data is generated during daily activities of the organisation, and as such, inputs generate a structured, meaningful data set. Data becomes information once its meaningful application adds value to the operations of the organisation (El Abed, 2011:5). Importantly, organisations should generate accurate information at the right time, using the correct reporting format, for the purpose of planning and monitoring performance against plans and trends, accounting for resource allocation and for decision making. The organisational structure provides a network which determines the pattern of data flow. The usefulness of this channel depends upon the control mechanisms at different levels of the organisational structure in order to ensure that data is valid, reliable and relevant (National Department of Health, 2013:13).

Information management promotes an understanding of what is happening in units or departments, creates awareness of the wider developments and helps with problem solving and planning, without repeating what is already planned, which means that information management creates and facilitates awareness of the different practices and processes within an organisation (Alcamí & Carañana, 2012:7). Thus, managers need relevant information on which to base their planning, controlling and decision-making functions. An effective information management process describes employees' responsibilities and accountabilities in the process of generating accurate data for input into the computer software designed for an information management system. The designing of information technology software which transforms data into information enables the production of comprehensive information for the organisation's understanding and adds value to decision making (Riley, Zuber, Vindigni, Gupta, Verani, Sunderland, Friedman, Zurn, Okoro, Patrick & Campbell, 2012:4). Therefore, the study recognises that the use of information technology is necessary for output processing at an acceptable level, which reflects the activities of the organisation.

It is necessary for good information management to provide value which should be relevant. Relevant information increases knowledge and reduces uncertainty surrounding the problem under consideration in an organisation (Morgan & Waring, 2004:3). However, relevant information must be satisfactorily accurate and consistent with the importance of the decision to be taken and executed. Information is considered to be complete if it informs the key points of the problem analysis and is trustworthy. Trust in the information source increases when it has a proven track record from primary sources, particularly where strategic decisions are made for communication with different units in organisations, assigning specific areas of activity and responsibilities (Levis, Helfert & Brady, 2012:8). Punctuality is also essential for the delivery of quality information without jeopardising its accuracy for effective decision making (Alcamí & Carañana, 2012:9). Information management involves the mapping of the data flow throughout the process of capturing data into the information management system. Quality information management is about certifying that there are no alterations to the meaning and understanding of data elements (Alcamí & Carañana, 2012:9). This study is conducted to describe the crucial role of primary health care practitioners with regard to quality information management in the North West Department of Health and

the need for development and training of primary health care practitioners in information management.

In terms of Chapter 1 Section 2 of the Constitution of the Republic of South Africa, 1996 (hereinafter referred to as the Constitution, 1996), the supreme law of the country obliges the Department of Health to fulfil what is expected from it with reference to health service delivery and the accountability thereof. Chapter 2, entitled the Bill of Rights, in Section 7(2), compels departments to respect, protect, promote and fulfil the basic human rights enshrined in it. Section 32(1)(a) describes the right of access to any information held by the state. Chapter 10, Section 195(1)(g) furthermore describes transparency in public administration which must be fostered by providing timely, accessible and accurate information (South Africa, 1996). Timely information refers to the timely receipt of essential information, while it is still useful to inform decision making processes. Timely information should be accurate (South Africa, 2012:9). Accuracy refers to maintaining uniformity of meaning and general understanding of information generated in the department. Accuracy, furthermore, requires the clear description of information procedures, systems and guidelines (South Africa, 2012:4).

Section 195(1)(h) of the Constitution, 1996, also prescribes the cultivation of good human resource management and career development practices, in order to maximise human potential (South Africa, 1996). Therefore, in order to maximise career development, organisations such the North West Department of Health must constantly assess their employees' current training, and career and development needs regarding the production of quality information and the management thereof.

The National Health Act, 61 of 2003 (hereinafter referred to as the National Health Act, 2003), prescribes a framework for a structured uniform health system within the Republic of South Africa, recognising the need to improve the quality of life for all South Africans and taking into account the obligations imposed by Section 27(2) of the Constitution, 1996, regarding the right of access to health care services. In order to unite the various elements of the national health system in a common goal to actively promote and improve the national health system in South Africa, the National Health Act, 2003, prescribes the delivery of quality health care services within national

guidelines, norms and standards, including quality information management. The responsibility of the National Department of Health as stated in Section 3(1)(d) of the National Health Act, 2003, is to ensure the provision of essential health services, which must at least include primary health care services, to the population of South Africa (South Africa, 2003).

In terms of Chapter 4, Section 25(1) of the National Health Act, 2003, a member of the executive council (MEC) must ensure the implementation of national health policy, norms and standards in the province, whereas Section 25(2)(b) prescribes that the head of a provincial department must manage the provincial health information management system. Section 25(2)(l) makes provision for the head of the provincial health department to conduct or facilitate research on health and health services, and according to Section 25(2)(j), the head of the provincial health department shall plan, manage and develop human resources for the rendering of health services. In terms of Chapter 9 of the National Health Act, 2003, Sections 74(1)(2), 75 and 76, the National Department of Health has to facilitate and coordinate the establishment, implementation and maintenance of the information management systems by provincial departments, district health councils, municipalities and the private health sector at national, provincial and local spheres, in order to create a comprehensive national health information system (South Africa, 2003).

The Public Finance Management Act, 1 of 1999, Section 40(1)(d) prescribes that the accounting officer for a department must submit, within five months of the end of a financial year to the relevant treasury, the non-financial and financial reports based on information management. Information management is paramount for accounting to treasury the resources allocated for service delivery. The National Treasury Regulations, 2012, Section 4.7.3 (a)-(b) prescribe that information management, including primary source documents for verification during audit processes, remain the primary responsibilities of accounting officers on behalf of the department. In order for the North West Department of Health to ensure compliance with information management requirements that are useful to internal and external users for timely and informed decision making, as stated in the National Treasury Regulations, 2012,

Section 4.1.2(b), human resource development and training of primary health care practitioners for quality information management is necessary.

Furthermore, the National Treasury Regulations, 2012, Sections 4.2.1(d), (f) and (g), prescribe that the accounting officer establishes and maintains the internal control environment of delegated responsibilities through the provision of standard operating procedures, training of employees and establishment of effective and efficient internal audit functions. The internal audit or control activities should cover the reliability of information as stipulated in Section 4.6.2(d) of the National Treasury Regulations, 2012. In terms of Section 5.1.10(a) of the National Treasury Regulations, 2012, the internal audit functions include the audit of the information management system environment, to safeguard that efficient and effective internal controls are maintained for integrity of financial and operational information. This implies that quality information management is a legislated responsibility of the North West Department of Health to account for the financial resources allocated for the provision of health services and operational information produced during health service delivery.

The Government of the Republic of South Africa has further placed emphasis on health care through the National Development Plan (NDP), Vision for 2030. Chapter 10 of the plan commits the Minister of Health to promote health by working together with other sectors and ministries to address social determinants of health, promote health-related issues and attend to medical issues to solve complex problems in relation to health service delivery (National Planning Commission, 2011:330). The delivery of health services is in line with primary health care principles to ensure universal access, equity, participation and an integrated approach within the district health system (Mayosi *et al.*, 2012:2036).

The NDP, through Goal 6 Priority 3, details the development of an information management system to use data for managing diseases, to enable the National Department of Health to make informed decisions, to receive equitable resource allocation and to maintain policymaking, monitoring and accountability over health service delivery (National Planning Commission, 2011:337). In order to achieve the above, the department has to develop and manage effective data systems and facilitate

a synergy of health information between national, provincial, district and local health services, currently reported through the District Health Information System (DHIS), to ensure credible information (National Department of Health, 2013:8). The department is investing in improving data quality through ongoing training, in order to strengthen officials' capacity in the use of information (Rohde, Shaw, Hedberg, Stoops, Venter, Venter & Matshisi, 2008:207).

Quality information management is achieved through accurate recording where data is generated (National Department of Health, 2012:6). Quality in this context refers to accomplishing the best, most reliable results and meeting standards of quality information management (National Department of Health, 2012:5). Quality is defined as the level of achievement of set goals which comply with set standards (Chandrupatla, 2011:2). Quality information is needed to assist a health care entity and its management as well as primary health care practitioners to find solutions to health care challenges and problems (National Department of Health, 2013:7). Thus, quality information must be accurate, reliable, objective, consistent, complete, relevant and timely (National Department of Health, 2013:13).

The National Department of Health focuses on continuous interventions to improve the data quality for the provision of health care information management. The North West Department of Health has in place data collection instruments prescribed by the National Department of Health, including (National Department of Health, 2013:21):

The primary health care daily tick register plus head count registers. The registers are used for consistent recording of information from the patient folder and supporting documentation. These registers are the primary source documents required for data verification and audits (National Department of Health, 2012:9).

Anti-retroviral therapy registers (Tier.net). This is an electronic register for patients enrolled for anti-retroviral therapy, including clinically stable patients collecting anti-retroviral treatment through the Central Chronic Medicines Dispensing and Distribution Programme. Clinically stable patients are defined as patients who have been on anti-retroviral treatment for six to twelve months and adhere to treatment, with no

opportunistic infections or adverse events or unchanged treatment for six months and an undetectable viral load (National Department of Health, 2014:3).

The midnight census for facilities with in-patient facilities, which is the register used for recording the daily headcount of patients admitted in a ward in order to determine the bed utilisation rate.

The delivery register, which is the register used for collecting essential data of maternity care services in relation to a number of admissions, deliveries, low birth-weight babies (<2.5 kg), stillbirths, babies with genetic disorders and major birth defects, caesarean sections and assisted deliveries, un-booked deliveries, babies born before the expected arrival date in the Maternity Unit and emergency referrals from other levels of care (National Department of Health, 2007:145).

The male medical circumcisions register. This is the register used for recording the type of operation, the specific anatomical structure operated upon, and the anaesthesia used to control pain, the duration of the operation and the signature of the surgeon.

Tuberculosis registers are used for case identification and treatment. These registers are used to record patients diagnosed with an active tuberculosis disease due to mycobacterium tuberculosis. Beyond making the diagnosis of tuberculosis, it is also necessary to categorise the tuberculosis patients for appropriate treatment and to evaluate the treatment outcomes in a standardised manner. Defining the different registration classifications of patients is essential for proper notification, standardisation of the treatment for the registration types, evaluation of trends in notifications and cohort analysis of treatment outcomes. The registration type is determined by the site of the disease, bacteriology and severity of the disease and history of previous treatments of tuberculosis (National Department of Health, 2014:33).

The use of the abovementioned registers aims to ensure that the Department of Health captures data consistently on the activities of practitioners in their various facilities, as a large part of health management's success is based on the accuracy of the information presented by the health practitioners. This means that information should be provided

without errors (Garrib, Stoops, McKenzie, Dlamini, Govender, Rohde & Herbst, 2008:549).

The North West Department of Health, used as the case study in this research, consists of three levels of healthcare activities. Primary health care is the first level and the core activities are centred in the district's health care system comprising 12 district hospitals, 47 community health centres and 267clinics.The second level consists of the three provincial hospitals, and the third level of health care includes the two regional hospitals and two specialised psychiatric hospitals where specialised hospital services are located (North West Department of Health, 2016:27).

This research focuses on primary health care practitioners who are located in the 12 district hospitals, 47 community health centres and 267 clinics. The quantity of data generated and managed by these practitioners is large and the North West Department of Health allocates data capturers who deal with the daily data capturing at primary health care facilities (North West Department of Health, 2016:58). Focusing on the human resource development and training of primary health care practitioners for quality information management will enable an understanding to be attained of the health information management requirements which will translate information into a management tool which assists the department in reaching its health objectives.

In the case of the Report from the Auditor General of South Africa (2016), the North West Department of Health did not comply in terms of factors such as input of data from where it is generated and processing of data from the primary source documents to the DHIS – thus, data output was rife with errors and inaccuracies. Primary health care practitioners are generating data from the primary sources at health facilities. Primary health care is the point of entry for health service delivery within the District Health System (DHS) established in terms of Section 29 (I) of the National Health Act, 2004.

According to Chapter 5 of the National Health Act, 2004, Section 29(2), the District Health System consists of various health districts, and the boundaries of health districts coincide with district and metropolitan municipal boundaries. Data from primary health care service delivery is captured on a daily basis from the primary source documents by data capturers and saved in the DHIS (National Department of Health, 2011:11). Data

capturers, also referred to as data officers, are responsible for capturing data and then forwarding the electronic data to the next level (National Department of Health, 2013:12). The DHIS processes data into reliable and essential information, used by the health care practitioners for problem solving and for operational and strategic decision making (National Department of Health, 2011:11).

The DHIS uses computer software programmes for capturing data collected during health care service delivery, as well as to present this data to the health environment for further use (National Department of Health, 2010:121). Health information is thus analysed to ensure that primary health care service providers find themselves in a position where they can make quality decisions. Quality health information is the basis for monitoring and evaluating health service delivery, planning, accountability to allocated resources and decision making (Necochea, Badlani & Bossemayer, 2013:59). Quality information in this context provides the right information at the right time, compliant with principles of accuracy, reliability, objectivity, consistency, completeness and relevance to measure progress in health service delivery (Knight & Burn, 2005:160).

Thus, this study concerns the human resource development and training of primary health care practitioners for quality information management, which is relevant as a requirement for monitoring and evaluating progress regarding the determinants of health and promoting healthy lifestyles in order to reduce the disease burden and strengthen health governance (Schaay & Sander, 2008:6). Quality information management improves the accountability of health service delivery from primary care level, as specified in the five-year strategic plan of the National Department of Health (2014:24) for the ministers to focus on strategic matters of ensuring compliance with government outcomes.

Human resource development and training of primary health care practitioners for quality information management is an intervention, essential to ensure health information system synergy between primary health care facilities, districts, provincial departments of health and the National Department of Health. The research seeks to explain the importance of human resource development and training of primary health

care practitioners for quality information management, in order to strengthen their role in generating quality data which will lead to quality information management in the North West Department of Health.

1.3 RESEARCH OBJECTIVES

The primary objective of this study is to determine the human resource development and training needs of primary health care practitioners for quality information management. In addition, the study aims to achieve the following sub-objectives:

- to describe the statutory and regulatory framework for health services in South Africa;
- to investigate the theoretical and statutory framework for human resource development and training;
- to describe the theoretical and statutory framework for quality information management;
- to determine the current challenges in terms of developing and training primary health care practitioners for quality information management in the North West Department of Health; and
- to make recommendations pertaining to human resource development and training of primary health care practitioners for quality information management.

1.4 RESEARCH QUESTIONS

The study aims to address the following research questions:

- What are the statutory and regulatory frameworks for health services in South Africa?
- What is the theoretical and statutory framework for human resource development and training?
- What is the theoretical and statutory framework for quality information management?
- What are the current challenges in terms of developing and training primary health care practitioners for quality information management in the North West Department of Health?

- What are the recommendations pertaining to the human resource development and training of primary health care practitioners for quality information management?

1.5 CENTRAL THEORETICAL STATEMENTS

The theoretical statements of this study include:

- Primary health care practitioners are involved with daily primary health care activities as implementers of the operational plans of the Department of Health, from where data is generated (Huq, Huq & Cutright, 2006:83).
- Human resource development and training is the advancement and strengthening of human resources abilities, skills, character, resources and processes that the North West Department of Health needs to adopt with regard to quality information management (Otoo, Agapitova & Behrens, 2009:3). Human resource development and training is furthermore defined as the acquisition of knowledge and skills in order to perform functions, solve problems and achieve individual, institutional and societal objectives (Watkins, 2006:2).
- Information management is the presentation of indicators and it uses values for monitoring performance against the objectives and goals of the organisation. Furthermore, data is analysed into information which an organisation requires in order to function and progress effectively (Espejo & Watt, 2011:8).
- The North West Department of Health must provide information that is accurate, reliable, timely, trustworthy and relevant. This includes that (Huq *et al.*, 2006:83):
 - **Accuracy** refers to maintaining uniformity of meaning and general understanding of information that is generated (National Department of Health, 2012:4). Quality information management is ensuring that there are no alterations to the meaning and understanding of data elements, which involves understanding of and mapping the data flow throughout the process of capturing (Engibous & Templeton, 2007:5).

- **Reliability** is the consistency, integrity and completeness of data to be delivered to management for informed decisions on health matters (National Department of Health, 2013:5).
- **Timeliness** refers to the timely receipt of essential information while it is still useful to inform decision making processes. Timely information should be accurate and comprehensive (National Department of Health, 2012:9).
- **Trustworthiness** is in relation to honesty, objectivity, dependability and the value of information resulting from enforced standards through governance. Trust attests to the authenticity of information received from the primary resources and conformity with legislation (Sidi & Hutchinson, 2013:37).
- **Relevance** is the extent to which quality information is applicable and helpful for the task at hand (Greisdorf, 2000:78). Relevance determines that information should be informative to the users, who are the strategic planners, as well as to society and to primary health care practitioners for operational planning and accounting to treasury for allocated resources (North West Department of Health, 2014:68).

1.6 RESEARCH METHODOLOGY

Research methodology in the context of this study can be summarised as the scientific process to obtain knowledge on the phenomenon under investigation and evaluating the appropriateness of research design in addressing the problem statement (Wye *et al.*, 2015:3). The research methodology encompasses a systematic investigation to understand a phenomenon and answer a problem statement, by interpreting data sources and making scientific conclusions that will support or disprove the purpose of an undertaken study (Rajasekar *et al.*, 2013:2).

1.6.1 Research approach and design

The research approach selected for this particular study is a mixed method approach. The mixed method approach is defined as a means for exploring and understanding the meaning that individuals or groups ascribe to a specific problem which is investigated,

using both quantitative and qualitative data, because they work to provide the best understanding of a research problem (Creswell & Clark, 2011:4). Thus, the mixed method approach opens the door to different views and different assumptions, as well as to different forms of data collection and analysis in the study (Creswell, 2009:6). Two forms of data are mixed in different ways, as one source of data may not be enough to further explain the initial results. Hence, a second method is needed to enhance a primary method, giving priority to one or both forms of data. The second method can be applied in a single study or in multiple phases of a study (Terrell, 2012:257).

Since the study investigates the current situation regarding human resource development and training of primary health care practitioners in providing quality information for information management purposes, the mixed method approach is appropriate for understanding the current realities and obtaining an in-depth understanding of human resource development and training challenges related to ensuring quality information management within the health environment. There are possible points of interfaces during data collection and transformation of one type of data into another type during analysis (Terrell, 2012:257). Therefore, in this study the integration of combined data is possible for comparing or combining results from both methods during interpretation (Terrell, 2012:272).

Case study research, as the research design for the study, allows for the exploration and understanding of complex issues, particularly when a holistic, in-depth investigation is required, which aims to describe and explain the phenomenon of interest (Zucker, 2009:3). A case study can be regarded as an in-depth study of individuals or institutions. It enables a researcher to closely examine data in a specific context of selecting a sample of the study population as the participants of the study, and to go beyond the quantitative statistical results by including both quantitative and qualitative data (Zainal, 2007:3). The design is appropriate for the research questions of this study, as it helps to explain both the process and outcome of a phenomenon applicable to the North West Department of Health (as case), which is concerned with human resource development and training of primary health care practitioners in providing quality information for information management.

1.6.2 Population and sampling

A research population is generally a large collection of individuals (Barreiro & Albandoz, 2013:6). In the case of this research, they are the primary health care practitioners in the North West Department of Health, which has been defined as the main focus of this scientific inquiry. When a researcher conducts an inquiry to investigate a research question, data must be collected from the research participants or respondents, in order to obtain information on the subject matter. A researcher decides on the number of respondents to participate in the study, whether the participants should be selected or not, and which data collection techniques will be applied (Welman & Kruger, 2003:46). In most scientific studies it is impractical and uneconomical to involve all the members of a particular population, and researchers will have to rely on information collected from a sample of the total population (Williams, 2007:65).

A sample is simply a subset of the population, as a result of inability of the researchers to test all the individuals in a given target population (Yount, 2006:1). A representative sample of primary health care practitioners in the North West Department of Health was selected through stratified random sampling. Stratified random sampling entails that the population is divided into separate groups or strata. Then, a probability sample, often a simple random sample, is drawn from each group (Latham, 2007:3). Randomisation is the process of randomly selecting population members for a given sample (Yount, 2006:7). In the context of this study, selecting participants for a sample was done in such a way that every member of the population had an equal chance of being selected.

The benefits of stratified sampling are that data of known precision (namely designations as described in the following paragraph) may be required from a sample of the population (Williams, 2007:68). The aim of the stratified random sample is to reduce the potential for human bias in the selection of persons to be included in the sample. As a result, the stratified random sample provides a sample that is highly representative of the population being studied, assuming that there is limited missing data and allowing the researcher to make statistical conclusions from the data collected that will be considered to be valid (Lynn, 2016:4). The advantages of accomplishing a more careful investigation to a few strata are described below.

In order to determine the direct influence of human resource development and training of primary health care practitioners for quality information management, the study population was divided into strata related to their occupational designations (Ahmed, 2009:3), including dental practitioners, medical practitioners and professional nurses. Specific consideration regarding each group included that apart from the services rendered at district hospitals, dental and medical practitioners are rendering weekly outreach services to primary health care facilities for a maximum of four hours a day, whereas professional nurses are permanently allocated to a primary health care facility.

- Full cross sections of the population can be attained (Yount, 2006:4). Stratified sampling enables one to draw a sample representing different segments of the population to any desired extent, such as professional nurses at the clinics and community health centres.
- Irrespective of the abovementioned advantages, the disadvantage of stratified random sampling is that it is unusable when researchers cannot confidently classify every member of the population into a subgroup (Black, 1999:119).

In this study, the sampling frame comprised 1783 primary health care practitioners, according to the Personnel and Salary System (PERSAL) of the North West Department of Health (2016). The focus was on identifying persons in strata responsible for data management, in order to obtain their in-depth understanding of information management. In this study *representative* means the proportion to total population, calculated as the percentages of the total target population. The table below depicts the actual sample size of this research, or the sampling frame representative of strata formed on the basis of members sharing attributes or characteristics of primary health care practitioners in the North West Department of Health.

Table 1-1 Total number of primary health care professionals

Category of health facilities and primary care health practitioners	Total number of filled posts representing the population	Percentage of total sample	10% random sample from a percentage of total sample
005814 HHW: Community health centres			
Dental practitioners	41	41 out of 1783 $\times 100\% = 2.3\%$	$2.3 \times 10\% = 0.23\%$ $1783 \times 0.23\% / 100\% = 4$
Medical practitioners	48	48 out of 1783 $\times 100\% = 2.7\%$	$2.7 \times 10\% = 0.27\%$ $1783 \times 0.27\% / 100\% = 5$
Professional nurses in community health centres	656	656 out of 1783 $\times 100\% = 6.8\%$	$36.8\% \times 10\% = 3.68$ $1783 \times 3.68\% / 100\% = 66$
030814 HHW: Community health clinics			
Professional nurses in community health clinics	1038	1038 out of 1783 $\times 100\% = 58.2\%$	$58.2 \times 10\% = 5.82$ $1783 \times 5.82\% / 100\% = 104$

Source: Personnel and Salary System (PERSAL) North West Department of Health (2016)

The total sample included for the study was, thus, 179 primary health care practitioners. The abovementioned primary health care practitioners in the North West Department of Health in selected primary health care facilities of the North West Department of Health all had an equal chance of participating in the study through stratified random sampling.

1.6.3 Data collection methods

The two specific methods used for data collection included documents as part of the literature review and a semi-structured questionnaire. Both are described in more detail below.

1.6.3.1 Literature review

A literature review is a report reflective of the literature related to the selected area of study. The review describes, summarises, evaluates and clarifies the literature (Taylor,

2012:4). Firstly, a literature review was conducted to describe the statutory and regulatory framework for health services, information management and human resource development and training in South Africa, with a focus on provincial administrations such as the North West Department of Health. The information obtained through the literature review assisted in the generation of new data related to human resource development and training and quality information management.

Secondly, global reports and documents were used to establish current developments concerning human resource development and training, as well as pertaining to information management. Books, previous research, national and annual reports of the North West Department of Health were also used as sources. According to a preliminary evaluation, adequate material was available to conduct this research that focuses on the human resource development and training of primary health care practitioners for quality information management. The following data sources were consulted:

- scholarly articles in academic journals;
- academic conference papers;
- research dissertations and theses;
- the online library of the North-West University;
- internet publications; and
- relevant acts, policies, regulations, annual reports and official documentation.

Relevant information found in literature enabled the construction of a semi-structured questionnaire for the purpose of gathering information from respondents.

1.6.3.2 Semi-structured questionnaire

A semi-structured questionnaire is a mix of unstructured and structured questions. Some of the questions and their sequence are determined in advance, while others evolve as the data collection proceeds (Blandford, 2013:428). The focus of this study

necessitated the development of a semi-structured questionnaire that contained both open-ended and closed questions designed to extract specific information about human resource development and training and information management, with a focus on provincial administrations such as the North West Department of Health.

- The advantages of considering the use of a semi-structured questionnaire in this study are the following (Babbie, 2007: 72):
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- The advantages of considering the use of a semi-structured questionnaire in this study are the following (Babbie, 2007: 72):
- semi-structured questionnaires with a large amount of information can be posted to a sample group and returned by a specific date and time;
- semi-structured questionnaires can be administered by the researcher with limited effect to its validity and reliability;
- the results can be quantified through the use of a software package and analysed scientifically and objectively, while qualitative data can be analysed thematically in support of quantified results; and
- quantified data can be used to compare and contrast other research and may be used to measure change or create new theories.

Even though there were advantages of using a semi-structure questionnaire in this study, the following disadvantages also apply (Black, 1999:120):

- the researcher may be asking questions based on a limited amount of information;
- respondents may reply in a biased manner, using their own interpretation of the question; and
- the researcher may be missing something of importance when developing the semi-structured questionnaire.

To ascertain reliability and validity of the data collection instrument, the semi-structured questionnaire was first be piloted with a small sample that was representative of the study population, in order to test the questionnaire empirically. The pilot study was conducted to determine participants' understanding of the questions, instructions and meaning of the words, and to determine the time required for completing the questionnaire (Arain, Campbell, Cooper & Lancaster, 2010:4).Piloting was done with two dentists, two doctors and four professional nurses in the four districts of the North West Department of Health. The value of a pilot study is outlined below and includes that (Mohabbattalab & Mohabbattalab, 2014:25):

- a pilot study detects possible flaws in measurement procedures including instructions, time limits, and in the operationalisation of items or concepts;
- a pilot study is also valuable to identify unclear or ambiguous items in a questionnaire; and
- a pilot study indicates whether proposed methods or instruments are inappropriate or too complicated.

The e-mailing of the semi-structured questionnaire was convenient for reaching out to participants in the four districts of the North West Department of Health. The administration thereof included an e-mail as well as a telephonic follow-up to the respondents. A database of the mailing lists was accessed through the North West Department of Health's Communications Directorate. The timetable of sending the

questionnaire for collecting the data and the expected return date to monitor the process of data collection was specified.

The limitation of this method of data collection is that some of the primary health care practitioners at rural health care facilities have no access to e-mail; although telephones or cellular phones were available to follow-up on delivered questionnaires.

1.6.3.3 Ethical considerations

Research that involves human subjects or participants is specifically interested in the analysis of unique and complex ethical, legal, social and political issues that are raised when people are involved as participants in research (MacLean, 2008:3). The activities or procedures involved in research include, amongst others, daily routine or service delivery, observation and administration of questions, which means that it is a prerogative of the study to conform to the following ethical requirements (National Department of Health, 2015:22):

- consideration of participant's perceptions, respect and dignity;
- informed consent obtained from the Head of Department of the North West Department of Health as well as written consent from the research participants outlining the purpose of conducting the research;
- reassurance of respondents that the information that they provide on the questionnaire is confidential and that results will only be used for research purposes; and
- analysis of data will reflect only the participant's responses to ensure confidentiality.

Even though the sample was selected from the target population, participants were informed that participation in this study was voluntary. Participants opting out would be replaced, following the same selection criteria, to ensure representation of the study population. There were no identified risks with regard to information gathering from the study participants. The benefits of this study include that participants were able to

understand how data collection influences informed decision making pertaining to public health service delivery.

1.6.4 Data analysis strategy

Qualitative data can assume any form, such as interviews, observations, documents and records; whilst quantitative data includes observational checklists, or numeric records, which means that the collection of both forms of data can interface during data analysis in a mixed method research design (Johnson, 2014:8). *Interface* refers to the degree to which appropriate conclusions and generalisations are made from mixed data (Creswell, Klassen, Vicki, Clark & Smith, 2014:5).

The applicable data analysis strategy in this study was a convergent parallel design, as there was a point of interface that allowed for comparison or relation between qualitative and quantitative data collection and analysis and appropriate interpretation made on transformed data (Creswell, 2003:17). The convergent parallel design refers to a parallel design in which mixing occurs when one type of data is transformed and analysed both qualitatively and quantitatively, answering related aspects of the question (Teddlie & Tashakkori, 2009:64).

1.7 SIGNIFICANCE OF THE STUDY

This study focused on the human resource development and training of primary health care practitioners for quality information management. The aim was to specify the critical contribution of primary health care practitioners in producing and ensuring quality data and its direct influence on quality information management. The results of this study add to the context of quality information management, and may even contribute to a new theoretical understanding of the influence of human resource development and training of primary health care practitioners for quality information management.

The results of this study describe the crucial role of primary health care practitioners with regard to quality information management. There is more clarity about the practitioner's involvement in health information management, monitoring and evaluation, strategic decision making about public health service delivery and needs-based resource allocation. The results of the study will be made available to the Department of

Health which may hopefully lead to a review of the training and development of primary health care practitioners in methods of data collection at operational level, in order to ensure the production of quality data. This will contribute to solving the problem of unreliable information, as this does not comply with the standards of quality information management.

1.8 CHAPTER LAYOUT

The layout of the five chapters of the study focusing on human resource development and training of primary health care practitioners for quality information management follows.

Chapter 1: Introduction and outline of the study

This chapter gives an overview and orientation about the context of the study in the description of the statutory and regulatory framework for health services in South Africa, human resource development and training and quality information management. The chapter identifies the problem and makes provision for the research objective and questions that guide the study. Central theoretical statements are included, as well as a description of the research methodology used in the study. The chapter concludes by identifying the significance of the study.

Chapter 2: Theoretical framework: human resource development and training

This chapter defines the theoretical framework for human resource development and training, as well as the statutory requirements guiding human resource development and training.

Chapter 3: Theoretical framework: quality information management

This chapter describes the theoretical framework for quality information management as well as the statutory requirements which enable quality information management.

Chapter 4: Analysis of development and training of health care practitioners for quality information management

This chapter determines the current challenges in terms of quality information management and human resource development and training of primary health care practitioners for quality information management in the North West Department of Health. The chapter is a description and analysis of the findings derived from case study data collection implemented in the North West Department of Health.

Chapter 5: Recommendations and conclusion

This chapter provides recommendations pertaining to human resource development and training of primary health care practitioners for quality information management, as the conclusion of the study.

1.9 CONCLUSION

The chapter described the context of information management and its applicability to Department of Health. The problem statement was presented as that the Auditor General of South Africa (2016) found that the North West Department of Health was non-compliant in terms of factors such as input of data from where it is generated and processing of data from the primary source documents to the DHIS. Output of data showed errors and inaccuracies were identified. The intended research approach, design and methods are described, as well as the sample strategy to be used in order to achieve representativeness. This chapter also gives an orientation to the provisional chapter layout of the study, with reference to a description of the theoretical framework for human resource development and training, and quality information management. Through the chapters the current challenges will be determined regarding quality information management and human resource development and training of primary health care practitioners for quality information management in the North West Department of Health. In the following chapter the literature pertaining to human resource development and training, as well as the statutory framework enabling human resource development and training is presented.

CHAPTER 2: A THEORETICAL FRAMEWORK FOR HUMAN RESOURCE DEVELOPMENT AND TRAINING

2.1 INTRODUCTION

This chapter locates the study within the discipline of Public Administration by defining Public Administration within which human resource development and training as a function is positioned. This chapter proceeds to describe the theoretical framework for human resource development and training, as well as providing an analysis of statutory requirements guiding human resource development and training. The chapter responds to the first study objective in which the study analyses the theoretical and statutory frameworks that support the human resource development and training, specifically of primary health care practitioners for information management. Firstly, however, the study proceeds to place human resource development and training within the discipline of Public Administration.

2.2 HUMAN RESOURCE DEVELOPMENT AND TRAINING WITHIN PUBLICADMINISTRATION

Public administration as an activity is defined as the detailed and systematic execution of public law, the implementation of government policies, and as an academic discipline, Public Administration studies this implementation and prepares public servants for working in the public service (Jordan, 2013:31). Public Administration is the study of the art and science of management and incorporates, as its subject matter, the political, societal, cultural and legal settings that have an effect on the running of public institutions (Marume, 2016:16). Public Administration is therefore a body of academic and practical knowledge that is applied to the service of society by public servants (Jordaan, 2013:31). Public servants work in public departments and agencies, at all spheres of government, in order to accomplish public policies (Marume, 2016:15). Consequently, public administrators are public servants serving the needs of citizens in the most economic, efficient and effective manner (Ballard, 2010:12). Thus,

the study argues that the realisation of public service delivery is attained through the management of and by training of public servants.

Public Administration as academic discipline links the enhancement of civil society and social justice, in order to make life more acceptable for citizens through the work done by public servants within government institutions and to enable these institutions to achieve their objectives (Cameron, 2013:572). The goals of the field of Public Administration are related to the democratic values of improving equality, justice, efficiency and effectiveness of public services (Berland & Dreveton, 2007:4). Public Administration as an academic discipline may be used as an instrument of economic development and social change by undertaking research derived from experiences and observations in public service (Nakamura, 2010:10). The contribution of this study to Public Administration as an academic discipline relates to the field of public service development and training of human resources for enhanced quality information management.

The process or functions of public administration are described as the number of related activities that need to be performed by public institutions to serve the needs of society (Maluleke, 2011:48). The significance of public administration in analysing the functioning of public structures in this study is in relation to the organisation, human resources, practices and procedures essential for the effective performance of functions entrusted to the government, as well as ensuring control for goal attainment within the organisations through development and training of human resources. Public administration as a function is furthermore defined as the collaboration and coordination of administrative activities of government to achieve desired goals or objectives of public policies (Berland & Dreveton, 2007:13). Public administrators who are the public servants performing public administrative activities are responsible for the administrative function. Functional activities in public administration are in relation to specific services such as education, health, finance, roads and public works, social services and defence (Nakamura, 2010:8), while in rendering these specific services, public administration focuses attention on financing, policy determination, goal determination, decision making, organising, procedural analysis of specific activities, controlling and management (Maluleke, 2011:58). Public administration can also be defined in terms of

its generic functions, namely, policymaking, organising, financing, staffing, determining work methods and procedures and controlling (Zaharia, 2011:115), which are further described below.

Policymaking is a response to situations that need to be attended to through the formulation of envisaged and clear goals followed by government action. In public administration, policymaking processes consist of formulating operational guidelines and frameworks for administrative regulation (Roux, 2002:421). The goals of these policies relate to issues such as the creation of structures and staff establishments, the allocation of resources, work methods and procedural arrangements for organisational effectiveness to meet the needs of society (Jordaan, 2013:38). For the purpose of the study, policy needs to be developed through which the human resource development and training of practitioners for enhanced information management is addressed.

Organising involves the creation or establishment of diverse structural arrangements, line and personnel components, span of control, assignment of authority, and co-ordination of centralised and decentralised activities (Nakamura, 2010:8). Organising in public administration is necessary for public servants to coordinate and ensure the establishment of a proper structure to support human resource development and training of health practitioners.

Public financing determines the government's capacity to implement policy and manage public resources through its own institutions and systems, hence transparency and accountability in the management of public finances is at the core of organisational performance (Simson, Sharma, & Aziz, 2011:16). Public financing provides the means for a government to pursue its policy objectives. Financial performance is done transparently in terms of relevant legislation such as the Public Finance Management Act, (1 of 1999), and provides the foundations upon which to build effective, capable and accountable public organisations. Public financial management encompasses the mobilisation of revenue; the allocation of these funds to various activities; expenditure; and accounting for spent funds (Ballard, 2010:12). Financial management in terms of the study implies the proper budgeting for addressing the human resource development and training needs of health practitioners in ensuring information management.

Staffing refers to human resource management or personnel administration to carry out government work in public institutions (Holzer & Charbonneau, 2008:30). The administrative processes associated with human resource management are guided by relevant legislation in relation to the Public Service Act, (103 of 1994), the Labour Relations Act, (66 of 1995), the Skills Development Act, (97 of 1998), the Occupational Health and Safety Act, (85 of 1993) and the Human Resource Development Strategy for South Africa, 2010 – 2030 (The Presidency, 2009:37). Human resource management is concerned with planning, executing, leading and controlling the execution of the planned activity and the mobilisation of the individual skills to accomplish an organisational goal (Jordaan, 2013:43). The development of a training plan to fulfil development and training needs of human resources in public administration in line with the allocated budget, executing the plan according to time frames and leading in controlling the execution of the plan is necessary for the success of the programme.

Determining work methods and procedures is done to ensure that administrators are able to carry out public services. Methods and procedures are described in manuals and managerial policies to ensure control of public administrative practices (Marume, 2016:74). There is a need for development and training of human resources on work methods and procedures described in manuals and policies, with specific emphasis on information management methods and procedures.

Controlling is an ongoing process of co-ordinating all related factors in a situation and people concerned against the set standards and measuring performance against the standards (Berland & Dreveton, 2007:11). The aim is to ensure a common understanding of work processes for effective actualisation of public services and improvement of productivity (Jordaan, 2013:42). By controlling the information capturing and use by health practitioners, you will be able to identify where corrective measures addressed through training and development may be required.

The study argues that the development and training of human resources in specific policies, guidelines, methods and procedures is necessary, in order to enhance understanding and ensure that the department fulfils its mandate effectively. Thus from the above, the argument is made that human resource management (or staffing) is a

public administration function and as such is studied within Public Administration as a discipline.

Human resource management is defined as the process of analysing and managing an organisation's human resource needs to ensure proficient attainment of goals (Coyle-Shapiro, Hoque, Kessler, Pepper, Richardson, & Walker, 2013:18). Human resource management is a system for the management of people at work to promote an individual's sense of identity within the public sector. Human resource development is a function within the basic human resources system, which includes, *inter alia*, recruitment and selection, training and development, employee benefits and compensation (Ballard, 2010:11). The following section provides a conceptual framework for human resource development and training.

2.3 CONCEPTUAL FRAMEWORK FOR HUMAN RESOURCE DEVELOPMENT AND TRAINING

In the following section concepts relevant to the study will first be defined, where after the significance of training and development will be described. The section concludes by identifying the different types of training available to organisations.

2.3.1 Defining human resource development and training

Human resource development is a learning experience organised by an employer within a specified period to bring about the possibility of performance improvement and personnel growth (Swanepoel, Erasmus, Van Wyk & Schenk, 2005:451). Human resource development is aimed at building capacity of employees in the workplace to improve productivity, the organisation of work and technology (Nel, Van Dyk, Haasbroek, Schultz, Sona & Werner, 2005:426). Human resource development represents a range of learning opportunities that focus on accomplishing broad career or professional goals (Sitzmann & Weinhardt, 2015:3). Human resource development refers to the provision of an opportunity to learn, develop new competencies and assume new responsibilities, in an effort to achieve the goals of the organisation and enhance staff collaboration, team work and increase overall performance and productivity (Mbarek & Gharbi, 2013:50). Therefore, human resource development

encompasses how employees perform their work after human resource development interventions. One of the main aims of human resource development is to improve the performance of employees who do not meet the required standards of performance, once their training needs have been identified (Nel *et al.*, 2005:427).

The main focus of human resource development is learning and the principal aim is to attain the objectives of the organisation and the individual (Swanepoel *et al.*, 2005:451). Development refers to general growth which may be achieved through learning. Human resource development is a process whereby employees serving or preparing for, for instance, managerial positions acquire the necessary abilities, experience, skills and attitudes to remain successful leaders within the organisation (Nel *et al.*, 2005:427). Human resource development prepares employees for future positions in the organisation, forthcoming organisational restructuring or change in technology (Swanepoel *et al.*, 2005:453). The importance of human resource development in this study is to make sure that human resource development is customised to fit the strategic goals and objectives of organisational and individual needs for specific occupational requirements, such as serving as primary data collectors for enhanced quality information management.

Employee training is defined as job related learning that is provided by employers for their employees to improve their skills, knowledge and attitude so that they can perform their duties according to set standards (Swanepoel *et al.*, 2005:452). Training is about the empowerment of individuals to improve their quality of life through the acquisition of skills in demand by employers in addition to qualifications and standards required for the position (Nel *et al.*, 2005:426). Training refers to a single programme of some kind where learning and experiences to acquire the required competencies takes place (Jacobs & Park, 2009:134). Training is executed to ensure that a task is performed correctly according to organisational requirements. Therefore, training enhances skills and abilities required to perform the job, in order to achieve goals and efficiency of the organisation. As a result, training is directed to improving employee performance in an organisation (Swanepoel *et al.*, 2005:453). The purpose of training in the work situation is to develop the abilities of the individuals to satisfy the current and future needs of the organisation (Maurer *et al.*, 2008:337).

2.3.2 The purpose of development and training

The purpose of development and training is to improve the performance of employees in order to perform at standard level (Coyle-Shapiro *et al.*, 2013:18). Development and training update employees' technical skills, for the organisation to perform more effectively (Grobler, Warnich, Carrell, Elbert & Hatfield, 2015:341), and avoid managerial obsolescence with the aim of keeping pace with new processes which enable employees to remain effective (El Mouallem & Analoui, 2014:246). Development and training solve organisational problems with the intention of performing the job more effectively (Goldin, 2014:11), and orient new employees to the organisation and the job (Ashtiani, 2015:11). Development and training prepare employees for promotion and managerial succession, with the aim of motivating and retaining employees through a programme of career development and to satisfy personnel growth needs (Grobler *et al.*, 2015:342). For the purpose of the study, focusing on training and development for quality information management will identify and propose recommendations to the North West Department of Health, which will enable them to plan and execute appropriate training programmes aimed at empowering primary health care practitioners to facilitate and ensure correct and accurate data capturing, which in turn may produce quality information for enhanced health care decision making.

2.3.3 Different types of training

The different types of training refer to formal or informal workplace learning or that which is conducted by training institutions. Formal or informal training can either be off or on the job training (Alipour, Salehi & Shahnava, 2009:64). Off the job training is conducted in a classroom, vocational school or any other place of learning. Off the job training includes training methods such as case studies, the incident method, in-basket training, management games, syndicate training, the conference method, braining storming and university programmes (Nel *et al.*, 2005:441). Each of these are described below:

- A *case study* is a training method whereby the trainee reads and analyses a problem within the organisation, chooses the best solution and implements it. Case study training gives the learner an opportunity to apply the knowledge and principles they

have learned previously and their ability to deal with real life situations in the organisation (Yazan, 2015:138).

- The *incident method* of training involves team role plays to an outlined problem in the organisation. Teams formulate a strong statement of position and role play the solution. The solutions of incidents are compared with results and employees will apply the gained knowledge to their job (Nel *et al.*, 2005:441).
- *In-basket training* occurs when learners act on the information contained in the items given to them, analyse each item and decide how to carry out the tasks. The method stimulates decision making abilities and develops managerial skills (Raheja, 2015:30).
- *Management games* enable learners to evaluate decision making abilities in an organisation, when two groups are competing, and to exercise caution when making decisions (Nel *et al.*, 2005:443).
- *Syndicate training* involves report writing which is then criticised and discussed before a decision is taken. The method improves problem solving abilities of learners (Maurer, Lippstreu & Judge, 2008: 337).
- *The conference method* involves group discussions of the organisation's plan, and learners identify problems and participate in finding solutions and reaching conclusions (Daryoush, Silong, Omar, & Othman, 2013:102).
- *Brain storming* refers to creative thinking and development of novel ideas to solve problems (AlMutairi, 2015:137).
- *University programmes* give managers an opportunity to broaden the viewpoint of the organisation and help them to prepare for higher positions in the organisation by expanding knowledge and learning about theories and procedures encountered on the job (Maurer *et al.*, 2008:347).

On the job training allows workers to learn by performing the tasks under guidance of an experienced employee, who offers advice and suggestions for performing the job

efficiently and effectively (Swanepoel *et al.*, 2005:465). On the job training includes methods such as coaching, mentoring, job rotation, junior boards, job instruction training, understudy and learner controlled instruction, as well as behaviour modelling, which are described below:

- *Coaching* turns a work environment into a learning opportunity through one to one instruction of what is to be done (Nel *et al.*, 2005:445).
- *Mentoring* is a communication relationship between senior organisational members, referred to as mentors, and mentees, impacting on the mentee's career success and increased performance (Swanepoel *et al.*, 2005:414).
- *Job rotation* involves rotating workers from job to job on a systematic basis, including different tasks and activities without disturbing work flow. Jobholders are exposed to a variety of job content, with a wide experience of the organisation, which enables them to acquire specific practical experience quickly (Goldin, 2014:5).
- *Junior boards* give promising managers experience in analysing the overall problems of the organisation assigned by top managers, and allow them to propose solutions (Grobler *et al.*, 2015:357).
- *Job instruction training* is instructing learners to do specific jobs by preparing the workers to present the operations right through performance try-out to a follow-up of the work done (Baklaieva, 2016:60).
- *Understudy* is the temporary assignment of a manager to a more senior manager, in order to broaden and expose the manager to various aspects of managerial practice (Dessler, 2011:300).
- *Learner controlled instruction* refers to learning whereby the instructor sets learning objectives and learners are accountable for meeting them at the pace at which they choose to learn (Grobler *et al.*, 2015:359).
- *Behaviour modelling* is about learning from the experience of others (Nel *et al.*, 2005:447).

The implication of off and on the job training for this study is that there are different methods of delivering development and training to human resources, in order to meet the organisation's and the individual's needs. Consequently, human resource development and training is conducted in relation to the legal framework enabling its implementation, as presented hereunder.

2.4 LEGISLATION SUPPORTING HUMAN RESOURCE DEVELOPMENT AND TRAINING

As mentioned in Chapter 1, Section 195 (1) (c) of the Constitution (1996) determines that public administration must be development-oriented as well as inclusive of good human resource and career management practices. Section 197 states that within public administration there is a public service for the republic, which must function, and be structured, in terms of national legislation, and which must loyally execute the lawful policies of the government of the day (South Africa, 1996). As such the study argues that public organisations are constitutionally obliged to promote the development and training of their employees, in this case the health practitioners, for enhanced service delivery, which for the purpose of the study focuses on quality information management.

The South African Qualifications Authority Act (67 of 2008) (hereinafter referred to as the SAQA Act, 2008), Chapter 2 Section 4 provides for development and implementation of the National Qualifications Framework (NQF) for an integrated approach to development and training in the country. The NQF provides the means to meet the needs for training providers in order to contribute to the full personal development of individuals and the economic development of the nation. The South African Qualifications Authority Act (67 of 2008) Section 3 provides for the NQF to register and accredit training standards and qualifications. The NQF is divided into 12 National Standards Bodies (NSB). The NSB: 05 is entitled Education, Training and Development from where the generation of standards by experts from standard generating bodies begins (South Africa, 2008).

According to Section 19 of the South African Qualifications Authority Act (67 of 2008), the NSBs recommend the registration of standards on the NQF, the update and review of qualifications and the definition of requirements and mechanisms for moderation to

be applied across Education and Training Quality Assurance Bodies. In terms of Section 9 of the South African Qualifications Authority Act (67 of 2008), the Education and Training Quality Assurance (ETQA) Bodies accredit essential training providers for specific standards or qualifications registered on the NQF. The ETQA bodies are responsible for monitoring the provision of quality amongst training providers, as well as evaluating assessment and facilitation of moderation amongst training providers. The ETQA bodies register assessors for specified registered standards or qualifications in terms of the criteria established and take responsibility for the certification of trained learners (South Africa, 2008). The implication of the South African Qualifications Authority Act (67 of 2008) for the study is that the Department of Health must consider and meet the standards set by applicable bodies when developing training initiatives for its human resources, including primary health care practitioners responsible for quality information management.

The Skills Development Act (97 of 1998)(hereinafter referred to as the SDA, 1998), provides an institutional framework to devise and implement national, sector and workplace strategies to develop and improve the skills of employees. The act integrates strategies within the NQF contemplated in the National Skills Fund for financing skills development by means of a levy financing scheme. Regarding funding for development and training by public service employers, the SDA, 1998, Chapter 7, Section 30A (a) mandates the employer to annually budget at least 1% of its payroll for the training and education of employees. The Department of Health has to budget 1% of the total payroll in order to comply with the levy financing scheme established in terms of the National Skills Fund of the SDA, 1998, in financing of skills development. The North West Department of Health budgeted R18 585 890 out of a total budget of R1 858 589 000 for the 2016-2017 financial year, specifically for the development and training of public servants, including bursaries of matriculates' who are studying in health related fields (North West Department of Health, 2016:54)

The Skills Development Amendment Act (37 of 2008), furthermore refers to an occupational qualification as a qualification associated with a trade, occupation or profession resulting from work-based learning and consisting of knowledge unit standards, practical unit standards and work experience unit standards. An occupational

qualification is provided by an occupational learning facilitator referred to as the skills development provider (South Africa, 2008). This means that this study which focuses on the development and training of human resources for quality information management should consider skills development providers who are registered to offer occupational learning, so as to improve the skills of the workforce.

The Skills Development Act (97 of 1998) Chapters 3, 9, (2)(1)(a) state that the minister of a relevant department, for the purpose of this study the Minister of Health, must establish sector education and training authorities (SETA) to determine the education and training needs of employers and employees that render similar services and develop an occupation based skills programme. Chapter 3, Section 10 (1)(b) of the Skills Development Act (97 of 1998) prescribes that a Sector Education and Training Authority (SETA) must develop a sector skills plan within the framework of the national skills development strategy, implement the sector skills plan by establishing learning programmes, approving workplace skills plans and annual training reports, as well as allocating grants for the development and training to employers, education and skills development providers and workers. The study argues that by identifying the information management needs of health practitioners, the Department of Health will be in a position to determine appropriate development and training initiatives which may be developed with the assistance of the appropriate SETA and funded through the skills levies fund. In terms of the Skills Development Act (97 of 1998) Chapter 6B Section 26 (a)(b)(c), the Minister of Health may establish a skills development institute to provide advisory services on skills development, mentoring and the recognition of prior learning, provide learning programmes, and perform any other prescribed function necessary to promote skills development with specific reference to:

- setting of occupational standards and qualifications;
- recognition and registration of occupational curricula;
- accreditation of occupational skills development providers;
- approval of occupational learning programmes;

- registration of occupational assessors and moderators;
- certification for occupational standards and qualifications;
- accreditation of occupational assessment centres; and
- approval of workplaces for occupational training and the monitoring of workplaces (South Africa, 1998).

For the purpose of this study, consideration will be given to the manner in which the Department of Health identifies the information management needs of health practitioners, in order to establish an appropriate development and training programme delivered through an accredited provider. Chapter 6C Section 26F (a)(b) and (c) of the Skills Development Act (97 of 1998) provides for the establishment of a quality council for trades and occupations (QCTO) to develop a policy on occupational standards and qualifications. The quality council for trades and occupations addresses any other matter concerning occupational standards or occupational qualifications (South Africa, 1998). The quality council for trades and occupations in this study refers to the Health Professionals Council of South Africa and the Nursing Council of South Africa, as the statutory councils responsible for developing occupational standards, the registration of qualifications and the license to practice (Health Professionals Council of South Africa, 2008:9).

In terms of the Labour Relations Act (66 of 1995)(hereinafter referred to as the LRA, 1995),Chapter1, Section 1(a) gives effect to and regulates the fundamental rights conferred by Section 27 of the Constitution, 1996, which includes the participation of organised labour on all three levels of implementation of the Skills Development Act (97 of 1998).At a strategic level, organised labour forms part of the National Skills Authority which advises the Department of Labour on policy and strategy formulation. At a sector level, organised labour participates in the SETAs that design and implement sector specific skills plans. At an organisation level, organised labour participates in the formulation of workplace skills plans and reports, which addresses both organisational and sector training needs (South Africa, 1995).

The Government of the Republic of South Africa has further placed emphasis on improving education, innovation and training through the National Development Plan (NDP), Vision for 2030 (National Planning Commission, 2011:261). Chapter 9 of the National Development Plan (2030) promotes a commitment to lifelong learning in order to diversify and enrich the life of citizens through improved productivity and economic growth. According to the National Development Plan (2030) the universities are fundamental in developing the nation. The functions of the universities are to educate and train people with high level skills for the employment needs of the public and private sector. However, organisations such as the science councils, research units, non-governmental organisations, the private sector and government units are sites for new knowledge production and application. Both the universities and organisations are required to expand the production of highly skilled professionals to enhance the innovative capacity of the country (National Planning Commission, 2011:371). The National Development Plan (National Planning Commission, 2011:293) makes provision for an expanded system of further education and training opportunities for persons who wish to develop their skills. A workplace in the private sector should offer targeted work-based training in line with the relevant SETA for the production of skills that are required to meet the needs of employers.

According to the National Development Plan (National Planning Commission, 2011:296), highly educated and trained individuals have a better chance in the labour market to participate in a knowledge driven economy. This implies that development and training of human resources in the Department of Health will enhance the knowledge and skills of employees, in order to contribute effectively to the economy of the country.

The National Development Plan promotes lifelong learning to compliment further education and training and ensure that citizens have ample opportunities to develop their skills. According to the National Development Plan, training should cover the relevant standard of the National Qualifications Framework required by the SETA, and highly educated and trained individuals have a better chance in the labour market to participate in a knowledge driven economy (National Planning Commission, 2011:296). This implies that development and training of human resources in the Department of

Health will enhance the knowledge and skills of employees to contribute effectively to the economy of the country.

The North West Provincial Development Plan (2030) was developed in line with the National Development Plan: Vision for 2030 as a strategic framework for government, creating a new platform for growth and development. Amongst the eight chosen development priorities with which the North West Development Plan (2030) is aligned to the National Development Plan (2030), Priority 5 is imperative in relation to improving education, training and innovation. Chapter 7 of the North West Provincial Development Plan (2030) (North West Planning Commission, 2013:190) refers to diversifying higher education systems through Further Education and Training Colleges (FETs), public adult learning centres, SETAs, professional colleges and Community Education and Training Centres to produce skilled and semi-skilled workers focusing on public services, finance, trade and manufacturing sectors.

According to the North West Provincial Development Plan (2030), institutions of higher learning are expected to align skills development and training with economic growth sectors and clusters, as well as the establishment of the North West University (NWU) as leading innovator. Key role players in research and innovation are research institutes, research organisations, science councils, departments, universities, non-governmental organisations and the private sector. As far as health is concerned, training and skills development of hospital managers, doctors, nurses and community health workers are a key priority. Focus is placed on adequate and qualified health staff, especially in terms of deploying them to the areas where they are most needed to promote access to quality health care and well managed health facilities. Furthermore, the North West Province is planning to build a capable and developmental state through a long term approach to development and training of staff to do their jobs (North West Planning Commission, 2013:197). This study, which focuses on the development and training of human resources, is aligned to the North West Provincial Development Plan (2030) which supports skills development in the province for growth and development.

2.5 THE HUMAN RESOURCE DEVELOPMENT AND TRAINING PROCESS

Human resource development and training in the public service is a process of attaining new knowledge and skills as required to promote accountability and the development of new competencies (Sitzmann & Weinhardt, 2015:2). The aim of development and training is to contribute to an organisation's goals and objectives. Human resource development and training interventions are organisation-based interventions driven by organisational goals (Holton III & Torraco, 2002:14). The process of executing human resource development and training is informed by aspects such as the standards against which job performance is measured in relation to defined job content of the post and performance of the individual (Nel *et al.*, 2005:435). The difference between the standards and the employee performance forms a performance gap and therefore represents the development and training need in order to achieve the desired outcome. The context of human resource development and training processes includes conducting a training needs assessment and development of workplace skills plan in order to develop a human resource development and training programme (Saad *et al.*, 2013:88). Human resource development and training processes involve three phases, namely the needs assessment phase, the development and training phase and the evaluation phase.

2.5.1 The development and training needs assessment phase

The development and training needs assessment phase is defined as an enquiry which is carried out to establish the nature of performance problems, in order to ascertain the underlying causes of the difference between the required standard of job performance, the performance of the employee and how these can be addressed through training (Swanepoel *et al.*, 2005:455). The development and training needs assessment process begins with the formulation of objectives, the purpose of development and training and the competencies required of trainees once they have completed the programme (Holton 111 & Torraco, 2002:14). The focus of the development and training assessment phase is to translate the training needs identified in the organisation, tasks and individual analyses into measurable objectives to guide the training process (Almendarez, 2013:244). The aim of the training needs analysis is to determine existing

needs, the importance thereof, how they were identified and how best they may be addressed in order of priority (Nel *et al.*, 2005:435). The employer starts by identifying the present performance deficiencies or areas where improvement is necessary to be addressed by development and training. Information on performance deficiencies can be obtained through performance appraisal, measures of organisation output, and incidents of poor job performance or clients' complaints (Pejanovic, 2006:12).

The development and training needs assessment phase addresses the organisation, the job and the individual. The organisational needs must consider the implications of training on the development and training strategy, the implications of not training, the organisation's future plan and goals, the areas where training is needed, the performance of the organisation in relation to its goals and priorities for development and training (Acemoglu, 2013:41). A job or tasks analysis is conducted to establish whether the task is important and training is essential. Job analysis determines how difficult the task is, the knowledge and skill required to perform the job, the steps in performing the task and the employee's explanation of how correctly the task is performed (Nel *et al.*, 2005:435). The determination of the skills and knowledge of the individual to be trained is based on their performance, so that training meets their needs. A skills audit is undertaken to determine the actual skills of the employees in order to define the skills gap and determine the skills needs of the organisation to develop the workplace skills plan. The aims of conducting a skills audit are to establish the existing skills per occupational group in the organisation, to compare existing skills with the organisation's skills requirements, and to determine the priorities of skills development and how best they are addressed through the workplace skills plan (Nel *et al.*, 2005:436). The relevance of a development and training needs assessment for this study relates to ascertaining which employees need information management training measured against the requirements of the organisation for ensuring quality information management.

2.5.2 The development of the workplace skills plan

The workplace skills plan is defined as the strategic human resource development and training activity aiming at the development of employee's skill and the capacity to

achieve the organisation's goals and objectives (Swanepoel *et al.*, 2005:459). The workplace skills plan contains information regarding the number of trained employees in each occupational group, the organisation's skills development priorities and quality assurance with reference to staff development and training (Seo, Barrett, & Bartunek, 2004:427). The workplace skills plan process entails conducting a job analysis as an input to the workforce planning process, identification of skills requirements from the workplace planning process, a skills audit of the employees, defining organisational training priorities, identifying a skills programme to address skills training needs and the implementation of the workplace skills plan (Nel *et al.*, 2005:436). The development of a quality assurance template for reporting, monitoring and evaluation of the workplace skills plan is fundamental to ensuring the appropriateness of the training received (Maurer *et al.*, 2008: 338).

2.5.3 The development and training phase

Training is conducted to achieve the organisation's development and training objectives. The learning goals and objectives are analysed to develop a detailed development and training programme. The learning objectives are defined to meet the performance standards or changes in behaviour (Swanson & Holton III, 2009:357). The development and training phase deals with the design, selection of appropriate training methods, subject training material, selection of learning aids for the required knowledge and skill, assessment instruments and cost of the programme, to make certain that it is within the allocated budget (Armstrong, 2012:299). Thereafter detailed contents of the training session and method of delivery are prepared. The focus of training is to develop transferable skills. The development and training phase also includes distribution of information on who should attend training, and why they should attend in relation to the benefits to them and to the organisation. Training is delivered systematically as planned.

2.5.4 The development and training evaluation phase

The development and training evaluation is conducted to determine the extent to which the training activities have met the stated learning objectives identified prior to the training (Malan, 2015:5). Development and training evaluation begins at the same time

as planning for training. Evaluation involves trainees' feelings about the training programme, measuring the degree of trainees' learning of concepts, information and skills that training intended to impart, and the assessment of the employee's change in behaviour at the workplace. The usefulness of the programme to the organisation can be determined by productivity, quality of work, employee attitude and the observation of trends in performance, to ascertain whether there are changes after training (Nel *et al.*, 2005:438). The implication of understanding the development and training process for this study is for the public servants in the Department of Health to recognise that a training process comprises the assessment of training needs, the training phase and finally the evaluation of the development and training programme's impact on the organisation's and the employees' performance.

2.6 THE ROLE-PLAYERS INVOLVED IN HUMAN RESOURCE DEVELOPMENT AND TRAINING

The development and training of human resources begins with the recruitment process whereby public servants are inducted into the relevant acts, policies, guidelines and standard operating procedures of the organisation by their managers. The role of managers is to ensure that public servants are aware of the acts necessary to execute their activities, in order to achieve the organisation's goals and objectives. The managers are responsible for aligning the organisation's development and training strategy with the overall organisational strategy, pay levies, available finances and personnel for development and training (Swanepoel *et al.*, 2005:444). The development and training administrator or manager pursues management direction, goals and objectives, identifies areas that can best be learned on the job, recommends training content, provides advice on how to conduct pre-course discussions with trainees and provides feedback to management about development and training in an organisation (Maurer *et al.*, 2008:339).

The chief financial officer complies with the levy financing scheme for financing of skills development by ensuring that the Department of Health contributes 1% of the total budget allocated for human resource pay roll to development and training. The head of

department approves a costed workplace skills plan for implementation by human resource development officials (Nel *et al.*, 2005:442).

The employees participate in development and training, in order to acquire new knowledge and skills to enhance the effective goal attainment of the organisation. Employees are required to self-regulate their learning, pay attention, exert effort and persist in learning, in order to ensure development and training goal attainment (Barrett & Bartunek, 2004:425). Employees are required to participate in development and training as part of the requirement to enhance their job performance (Saad *et al.*, 2013:86).

Organised labour advises the Department of Labour on policy and strategy formulation participates in the development of sector specific and workplace skills plans and monitors the implementation of the plans. Organised labour protects the rights of employees by providing an oversight role for ensuring that there is fairness in development and training policy implementation. Organised labour ensures that proper processes are followed in the implementation of development and training in the workplace, the private sector and institutions of higher learning.

Education and skills development service providers accredited by the relevant SETA provide training. The development and training practitioners have occupational expertise and contextual understanding for development and training. Their role is to facilitate learning. Education and skills development service providers are administrators of development and training, assessors, evaluators, learning expertise designers, learning material developers and strategic training needs analysts (Nel *et al.*, 2005:399).

2.7 THE BENEFITS OF HUMAN RESOURCE DEVELOPMENT AND TRAINING

Development and training necessitates the establishment of a link between the individual employee's and his/her organisation's needs. The organisational needs refer to (Starks, 2016:2):

the organisation's strategic plans associating development and training of human resources with a mission, training goals, objectives, budget and time frames allocated for training;

- the structuring of an organisation specific development and training plan for human resources to enhance the attainment of outcomes;
- the investment in a human resource development and training programme; and
- the attainment and maintenance of a proficient workforce through the development and training of human resources.

Development and training has the following benefits to the organisation (Nel *et al.*, 2005:455):

- Improved job knowledge, skills and a positive attitude towards productivity and quality of work;
- a build-up of a sense of accountability to the organisation for being competent;
- cut consultancy costs by utilising competent in-house consulting;
- creation of enhanced corporate representation and motivation of employees to identify with the organisation;
- fostering of faithfulness, honesty and confidence, thus improving human relations between employer and employees;
- provision of support to understanding organisational policies and direct organisational development by providing information for prospective requirements of the organisation;
- facilitation of change management within the organisation;
- leads to more successful, informed decision making and problem solving interventions;

- assists in developing leadership skills hence the promotion of succession planning from within the organisation therefore creating and appropriate climate for growth;
- improves organisational communications, interpersonal relations, builds group cohesion, eases conflict management, and advances relations with organised labour.

The North West Province participates in the development and training of its human resources, in order to benefit organisations such as the North West Department of Health. The benefits of human resource development and training to individual employees who are required to participate in the training programme for improvement of job performance and productivity are that (Geldenhuys, Łaba & Venter, 2014:3):

- development and training assist the employee in making enhanced pronouncements for effective problem solving in the organisation;
- employees are inspired to implement motivational variables of accomplishment, growth, accountability, improvement, recognition and acknowledgment, thus encouraging self-development and self-reliance;
- employees are motivated to manage pressure, stress, disappointments and arguments;
- programmes impart knowledge enabling employees to lead, and inspire them to have a positive attitude at work and job satisfaction;
- programmes assist employees to communicate effectively as a result of development, speaking and listening skills; and
- programmes eliminate employee's fear of attempting new tasks.

For the purpose of the study consideration will be given to the benefits of development and training on individual employees, in order to improve employee morale. As a result, employees who are confident in their ability to succeed and have high cognitive ability, establish more challenging goals and are confident about achieving them (Bandura, 2012:4). Cognitive ability represents an individual's intellectual capacity and high ability,

resulting in repeated success across a wide range of tasks, ultimately leading to higher self-efficacy (Dzubak, 2005:2). Self-efficacy refers to people with high assurance in their capabilities to approach difficult tasks, set challenging goals, maintain strong commitment to set goals, while their self-motivation is heightened to sustain their efforts through development and training (Mbarek & Gharbi, 2013: 50).

From the above, the general observation regarding the conceptual framework provided for development and training is that the statutory framework enabling human resource development and training within public administration is outlined in the Constitution of the Republic of South Africa (1996), the South African Qualifications Authority Act (67 of 2008), the Skills Development Act (97 of 1998), the Skills Development Amendment Act (37 of 2008), the Labour Relations Act (66 of 1995), the National Development Plan (2030) as well as the North West Provincial Development Plan (2030). The chapter defined the concepts of human resource development and training as the basis of what development and training entail. The purpose of development and training as outlined is to meet the objectives of individual employees and the performance of the organisation. The different types of training were discussed in order to determine the most suitable method that meets the needs for individual employees and the organisation for the human resource development and training process to be effective. Within the training process, role-players involved in human resource development and training were identified as their involvement is crucial from the development of the workplace skills plan to benefit both the individual employee, the organisations' goals and objectives and to comply with the legislative requirements of public administration.

2.8 CONCLUSION

This chapter provided for a conceptual and theoretical understanding of development and training of human resources in the public service, as well as the influence on an organisation such as the North West Department of Health and on individual employees. The chapter contextualised the link between the generic functions of public administration, namely policy-making, organising, financing, staffing, determining work methods and procedures with development and training of human resources. The statutory environment supporting or enabling development and training of human

resources was described. The role-players involved in development and training were identified and it is necessary to recognise their contribution during training and policy development by the North West Department Health. The chapter addressed the research objective of describing the theoretical and statutory framework for human resource development and training. The following chapter provides for a conceptual framework as it relates to quality information management

CHAPTER 3: A THEORETICAL FRAMEWORK FOR QUALITY INFORMATION MANAGEMENT

3.1 INTRODUCTION

This chapter provides for a theoretical framework relating to quality information management, as well as the statutory requirements prescribed for ensuring quality information management through appropriate public administration activities. The information quality frameworks in public administration refer to the following dimensions of information quality criteria: accuracy, consistency, timeliness, completeness, accessibility, objectiveness and relevance (Pejanovic, 2006:14). An information quality criterion relates to the user of information, the information source itself and the query process of accessing information. This chapter identifies and defines role players involved in quality information management from the primary source where data is generated, the information system and information security up to the user of information.

3.2 QUALITY INFORMATION MANAGEMENT IN PUBLIC ADMINISTRATION

Quality information management in public administration is a tool to support the delivery of new and better government services to government stakeholders by increasing efficiency and transparency and by improving accountability in procedures and management (Servoz, 2015:76). The importance of quality information management in public administration relates to decision making and accountability in the management process for planning, defining, organising, monitoring and performance management (Ziemba & Obłąk, 2014:32). Therefore, the provision of valuable information is crucial for enhancing decision making, openness, transparency, and accountability in public administration (Servoz, 2015:73). Ensuring quality information management in public administration refers to providing access to timely, relevant and accurate information for process redesign and standardisation, improved project management practice, rigorous quality assurance, and increased support and involvement in public service delivery (Ziemba & Obłąk, 2014:33).

Additionally, successful quality information management requires sufficient attention to policies, processes, structure, rules and regulations for the establishment and use of roles, responsibilities of establishing data quality expectations, and procedures concerning the acquisition of systems that handle data, maintenance, dissemination of access security, standard queries and reports and disposition of data in compliance with organisational practices (Geiger,2013:1). Quality information management requires the coordination of data from activities of an organisation and a close cooperation between employees, managers, information technology specialists and information analysts to make public administration practice more responsive, accountable, transparent and results driven (Ziamba & Obłak, 2014:35). Once information is gathered by the responsible officials regarding organisational performance, information is assessed, analysed and conclusions drawn (Servoz, 2015:74). Quality information management means that there must be an outlet for the information to be used. Consequently, human resources in the public service require knowledge, skills and experience in methods for collecting and providing meaningful and reliable data in addition to analysing information. The study argues that providing development and training to human resources for quality information management will contribute to improved information management in the public service, in general, and in the North West Department of Health, in particular.

3.3 CONCEPTUAL FRAMEWORK FOR QUALITY INFORMATION MANAGEMENT

In the following section concepts relevant to the study will first be defined, where after the significance of quality information management will be described. The section concludes by identifying the quality information management process and the benefits of quality information management to the organisations.

3.3.1 Defining quality

Quality is the degree to which a set of inherent characteristics fulfils the requirement or expectation that is stated (Hoyle, 2007:10). Thus, quality is the degree of excellence free from defects or imperfections and conformance to characteristics of specifications such as accuracy, consistency, timeliness, completeness, accessibility, objectiveness and relevance in relation to a quality data perspective. Quality describes what the

service, product or information should be in relation to the required standard (Evans, 2005:18). Quality is the extent to which a requirement is met measured against the standard. The standard is the stated, implied or obligatory need, requirement or expectation (Hoyle, 2007:11). Quality in information management and information systems emphasises that information source documents meet specifically determined standards of quality (Knight & Burn, 2005:162). Information quality (IQ) and information systems are terms that are interchangeable with data quality (DQ), whereas data refers to numbers or images that have yet to be organised or analysed to answer a specific question. Quality in information management is defined as appropriate, useful data that has been processed to increase knowledge (Kerr, Norris & Stockdale, 2007:1018). Data quality is referred to as data integrity. Data quality is maintaining and assuring the correctness and consistency of reliable data for the purpose of turning the data into meaningful information (Botha, 2015:39).

Total quality management describes acceptable information quality frameworks sharing a number of characteristics regarding classifications of dimensions for quality. Data quality is defined as the degree to which a set of characteristics of data with reference to accuracy, consistency, timeliness, completeness, accessibility, objectiveness and relevance fulfils requirements (Knight & Burn, 2005:162). Below are definitions of different data quality dimensions.

Accuracy is the extent to which data is correct, reliable and certified free of error. The data is measured against a referenced source and found to be correct (Levis *et al.*, 2012:4). Data accuracy refers to whether the data values are the correct values. Data values are the right values represented in a consistent and unmistakable form. Data is collected and aggregated with the purpose of turning it into meaningful information where decisions are positively and responsibly influenced. Accurate data can be referenced for analysis and can be the basis of making organisational decisions (National Department of Health, 2013:14).

Consistency is the extent to which information is presented in the same format and is compatible with previous data. Consistency of data quality refers to text, images and other content remaining the same, regardless of how and where they were presented,

as the content remains the same (Chuan, Yoa & Chao, 2016:14). Data consistency also refers to the process of keeping information uniform, as it moves across a network and between various applications on a computer (Oxford Dictionary. 2014). The three types of data consistency are point in time consistency, transaction consistency and application consistency, to maintain the integrity of the information stored on the information management system, whether computer or network-based. Point in time consistency deals with ensuring that all elements of a system are uniform at a specific moment in time, to prevent loss of data during system crashes, improper shutdowns, and other problems on the network. Transaction consistency is consistency of a piece of data across a working transaction within the computer, in order to ensure that data entered into a programme remains reliable. Application consistency is the transaction consistency between programmes, which means that the information moving between the programmes will remain in its original state (Sarras, 2015:183).

Timeliness is the extent to which the information satisfactorily represents the latest information for the task at hand. Timeliness refers to the time expectation for the accessibility of data, as well as to the capturing of data as promptly as possible after the activity. It must be available for the intended use within a reasonable time period to support information needs and to influence service or management decisions (Evans, 2005:59).

Completeness is the extent to which information is not missing and is sufficiently extensive for the task at hand (Veiga, Saraiva, Chapman, Morris, Gendreau & Schigel, 2017:7). Data requirements should be clearly specified based on the information needs of the organisation and data collection processes matched to these requirements (Robson, 2011:407).

Accessibility is the extent to which information is available, or easily and quickly retrievable, however restricted appropriately to maintain its security (Hoyle, 2007:137). Accessible information is easily obtained in the right format and the right time to meet the needs of users (Pearlson & Saunders, 2013:365). Therefore, timely information is available when it is needed.

Reliability is the extent to which information is correct and trustworthy. Data should reflect stable and consistent data collection processes across collection points and over time. Progress toward performance targets should reflect real changes rather than variations in data collection approaches or methods (Evans, 2005:99).

Objectivity is the extent to which information is unbiased, unprejudiced and impartial (Hoyle, 2007:96). Quality data equates with provision of objective evidence in relation to procedures of documentation and record (Kerr, 2007:1021). Auditors require evidence, thus organisations are persuaded to produce correlating documents as evidence of quality data captured in the information system. In other words, auditors verify conformity to standards of quality data (Auditor General South Africa. 2016:43).

Relevance is the extent to which information is applicable and helpful for the task at hand. Data captured should be relevant to the purposes for which it is to be used, therefore an annual review of requirements to reflect changing needs is necessary. Public administrators have a duty to collect and report performance information against a wide range of indicators. Each service will identify reliable local performance indicators to manage performance and drive improvement. Indicators are reviewed on an annual basis to ensure relevance (Bank, 2000:206).

The achievement of the characteristics of quality data needs to be planned, controlled, assured, managed and established, as they form the subject matter of quality requirements (Hoyle, 2007:17). The following quality management principles namely, leadership, governance, systems and processes, policies as well as human resources, skills and training are coordinated to direct and control an organisation's requirement and expectation to satisfy the standard for quality data (Strohm, 2016:8). Quality management principles are beliefs for leading and operating an organisation, aimed at continually improving performance (Bank, 2000:206). Each of these principles mentioned above are described in more detail below.

Leadership is required at all management levels of the public service in order to establish unity of purpose and direction by creating and maintaining the internal environment in which public administrators are fully involved in achieving organisational objectives (Hoyle, 2007:26). Leadership requires having a vision, and creating

confidence in others to follow the vision (Oz, 2004:374). The importance of leadership is making quality information management more efficient and effective by creating new techniques to achieve the organisational goals, inspire employees, present a role model for desired behavior, delegate responsibility and take responsibility for ensuring quality information management (Stair & Reynolds, 2003:37). Leadership is necessary to stress the importance of the organisation's data and its integrity by bringing about a shared vision and value, so that everyone knows the importance of quality information management for the organisation. Commitment to data quality is communicated clearly, reinforcing the message that all employees have a responsibility for data quality. The leader inspires the employees about the influence of quality data on information management to foster the implementation of a successful information management system. A senior individual at top management level has the overall strategic responsibility for data quality. Leadership with regard to data qualities is characterised by being proactive in monitoring compliance to information management process flows, understanding and responding to challenges of data, providing required resources, educating, training and mentoring employees, setting challenging goals and realistic targets, as well as the strategy to achieve goals and targets, thus, instilling a sense of responsibility and accountability within the organisation (Armstrong, 2012:571).

Governance is required to establish and put in place clear roles and responsibilities to ensure accountability for data quality. Governance involves assignment of human resource representatives who are best acquainted with data as data owners for various data units. Governance of information includes clear corporate leadership of data quality by those charged with governance (el Abed, 2011:8).

Systems and processes are needed to secure data which is valid, relevant, accurate, reliable and complete. A quality system is defined as the organisational structure, procedures, processes and resources needed to implement quality data (Hoyle, 2007:97). Processes are necessary inputs that are managed effectively to produce results required to fulfill the purpose of the organisation in relation to quality information management. The management of processes includes principles such as the establishment of what objectives the process wants to achieve, measures of success, definitions of activities that are crucial to achieve the objectives, defining required

resources and competencies necessary for human resources in order to establish clear responsibilities, authority and accountability for managing the process as well as how performance is measured against the objectives (Stair & Reynolds, 2003:428). Documentation for the process workflow diagrams showing data input up to output consisting of who is generating data, when data is collected, where data is captured, why data is collected, and how data is entered into systems is necessary to generate accurate and complete information. The development of systems and processes for the collection, recording, analysis and reporting of data which focuses on securing data that is accurate, valid, reliable, timely, relevant and complete is crucial to achieve the desired results. A system approach for quality information management is about identifying, understanding and managing interrelated processes of a system that contribute to the organisation's effectiveness and efficiency in achieving its objectives. A system is defined as a well-organised set of ideas, principles, theories or operations working together in a regular relationship to produce specific results (Hoyle, 2007:29). Therefore, a system is a set of interconnected processes from quality data collection from the source documents, capturing data using the information system, and analysing information to ensure quality information necessary for accountability, informed decision making and planning (Armstrong, 2012:140).

Policies and procedures for data integrity guide systems and processes for data consistencies, in order to proactively bring to the surface data or system process concerns before they become a problem. Policies provide comprehensive guidance to employees about data collection, recording, analysis and reporting, in order to support the information systems. Policies and procedures are reviewed periodically and updated when needed (Zelazny, 2011:39).

Human resources, skills and training in information management significantly assist in effectively managing the organisation's data integrity. Human resources are trained to ensure that they have the capacity and skills for the effective collection, recording, analysis and reporting of data. Skilled human resources are ultimately champions for good data quality which is accurate and reliable (Armstrong, 2012:296).

Data quality is thus necessary to support the production of quality information used in the decision making process. Therefore, quality data is reviewed regularly to ensure alignment to source documents for verification and senior management approval (Stair & Reynolds, 2003:182). Healthcare data is generated at the source by providers such as medical doctors, dentists, professional nurses and pharmacists during the normal course of health service delivery. The reliability and integrity of quality data begins with the accuracy and the completeness of the data captured in the source documents (Wang & Strong, 2013:7). Every unit has different purposes for collecting and using data ranging from the clinical, administrative and financial aspects of data for accountability, planning and decision making (Knight & Burn, 2005:162). The importance of quality in information management for this study is in relation to the information lifecycle of capturing, processing, storing, and disposing of information for accountability and decision making.

3.3.2 Defining information management

Information is defined as a collection of facts organised in such a way that it has additional value beyond the value of facts themselves (Stair & Reynolds, 2003:5). The term information may be used interchangeably with data, but data refers to raw facts or numbers. Data is a set of specific objectives, facts or observations which are easily structured, captured or transferred, often quantified (Pearlson & Saunders, 2013:15). Data is transformed into information after it has been contextualised, categorised and condensed (Mellor, 2011:6). Therefore, information is data that has been processed into a form that is meaningful to the recipient and is of real or perceived value in current or prospective actions or decisions (Geiger, 2013:1). Information requires units of analysis which means that employees have to make sense out of data for it to become useful as information. Information management refers to accurate and reliable data collected for reference, measurement and analysis of the organisations' performance (Harsh, 2007:1). Information management outlines the basis of reasoning for potential successes, deficiencies or limitations of the products or services, calculations and decision making for resource utilisation and allocation (Hart & Gregor, 2008:4). The characteristics of valuable information are accuracy, completeness, economy, reliability,

relevance, simplicity, timeliness, verifiability, accessibility and security for decision making (Raisinghani& Kaiser, 2011:473).

While accuracy has also been defined in Chapters1 and 2; *accuracy* further refers to correct information with no errors. Accurate information is a result of generating accurate data. Accurate information is precise and relied upon for the intended purpose (Lucey, 2005:18).

Completeness refers to information containing all the important facts. The information required for decision making is available with reference to identified key elements (Wang & Strong, 2013:23).

Economical refers to the fact that information should be cost-effective to produce (Zelazny, 2011:2).

Reliability of information depends on reliability of data collection method from the source of information (Franklin, 2012:294).

Relevant information is important to the decision maker. Relevant information to the manager's sphere of responsibility helps them to carry out designated tasks based on informed decisions (Kerr *et al.*, 2007:1018).

Simple information is easy to interpret. The information system organises the information flow such that the required information or knowledge is correctly delivered in an understandable context (Mellor, 2011:6).

Timely information is delivered when it is needed. Timely also refers to data and information that is available on time for meeting budgeting, monitoring, decision making and reporting requirements (National Department of Health, 2013:5).

Verifiable information can be checked against the source to make sure it is correct. Confidence in the source is enhanced by sources that are reliable, defined and can be communicated to the manager of the organisation and the auditor (Lucey, 2005:21).

Accessible information is easily accessed by authorised users (Pearlson & Saunders, 2013:365), while *secure* information is inaccessible to unauthorised users (Kerr *et al.*, 2007:1023).

The quality of information depends on the information source from where data is generated (Raisinghani & Kaiser, 2011:473). The information source is the origin of information quality and the basis of information quality context is completeness, documentation, verifiability, reliability, objectivity, timeliness and accuracy (Kerr *et al.*, 2007:1021). Information management is related to maintaining and assuring the accuracy and consistency of data over its entire process from manual data capturing to data entry into the information system for making important, quick or continuing decisions (Geiger, 2013:7). The Department of Health Policy for District Health Management Information Systems, as well as the standard operating procedures described in more detail in Section 3.5, provide guidance for ensuring that data is accurate, consistent, timely, complete, accessible, objective and relevant to health care service delivery (National Department of Health, 2011:25).

3.4 QUALITY INFORMATION MANAGEMENT PROCESS

A process is an ordered set of ideas, principles and chain of operations that produce specific results (Pearlson & Saunders, 2013:18). The quality information management process is defined as a set of interrelated activities directed to the achievement of a goal (Knight & Burn, 2005:168). The quality information management process follows a systems approach, whereby a series of functions from generating data during operations of the organisation, data collection, capturing data into the information system, processing of data into information, analysis of data up until feedback to the organisation for decision making and accountability about public services occur. An information system is furthermore defined as a set of interrelated components that collect, manipulate and disseminate data and information and provide feedback to meet objectives (Stair & Reynolds, 2003:4). A system is a set of elements that interact to accomplish a goal. The elements and relationship amongst them determine how the system works (Mellor, 2011:117). An information system is also defined as a combination of technology, hardware, software, data and network infrastructure to

support the flow and processing of information, the people who capture data and analyse information, as well as the process of how the organisation manages information (Pearlson & Saunders, 2013:19). Systems have inputs, a processing mechanism, output and feedback as their components. Turning data into information is a process or a set of logically connected tasks carried out to accomplish a defined outcome, thus a quality information management process entails connecting interrelated elements of quality data and processing data into information (Lucey, 2005:34). A quality information management process also includes systems control to maintain data security. Security refers to the policies, procedures and technical measures used to prevent unauthorised access, alterations, theft or physical damage to information systems (Laudon & Laudon, 2013:245). The different components of a system will now be described.

3.4.1 Input

Information system input is the activity of gathering and capturing raw data (Mellor, 2011:11). Input is furthermore defined as the capture or collection of raw data from within the organisation, or from its external environment, for processing in an information system (Laudon & Laudon, 2013:468). Accurate input is important to accomplish the desired output. The input of data from the primary source documents where it is generated requires skills, knowledge and time. Skills to successfully generate health data in this study refer to health professionals such as the medical doctors, dentists and professional nurses who have the knowledge to define the steps of generating and capturing data on the patient registers (as original source documents). The timelines for routine data submission to the National Department of Health (NDoH) from facility, sub-district, district and provincial departments to the NDoH is 45 days (National Department of Health, 2012:7). The process includes the daily collection of data during each client contact, validating data from the source documents, calculating sub-totals and capturing this online into the information system. Input control mechanisms are vital for quality information management in order to eliminate errors and maintain input integrity and data security. Input controls can be passwords and identification controls for employees who use the system and standardised data input

form (Mellor, 2011:118). The purpose is to reduce errors and protect the system against deceitful input (Alcamí & Carañana, 2012:12).

3.4.2 Processing

Processing information involves converting, manipulating or transforming raw data into useful meaningful information (Pearlson & Saunders, 2013:213). Processing can refer to calculations, making comparisons, or taking alternative actions, manually or with a programmed computer system (Alcamí & Carañana, 2012:18). For the purpose of this study, the information system refers to the computer-based Department of Health Information System where data is processed into health information. The Department of Health processing mechanism or throughput involves online capturing of data elements into the information system (National Department of Health, 2013:15). Information officers further validate captured information from facilities. Processing in the information system includes processing controls necessary to ensure that processing is done without errors. Information storage controls prevent users from gaining or accidentally destroying data. The use of passwords, identification numbers, backup copies of data and storage room are examples of process control (Ziemba & Obłąk, 2014:42).

3.4.3 Output

Output is the production of useful authentic quality information in the form of documents or reports (Pearlson & Saunders, 2013:214). Output is also defined as the distribution of processed information to the people or activities for which it will be used (Laudon & Laudon, 2013:471). Output controls are necessary to make certain that information is handled correctly by recording output generated from the computer in a file indicating the time that documents and reports were generated and their destinations (Stair & Reynolds, 2003:569).

3.4.4 Feedback

Information feedback refers to output that is returned to the appropriate members of the organisation to help them evaluate the input and is used to make decisions or for forecasting purposes (Stair & Reynolds, 2006:392). Forecasting is the process of

predicting future events to avoid problems (Ziemba & Obłąk, 2014:45). Quality decisions or decision making are informed by accuracy as an important dimension of quality reflecting reality, timely information with reference to efficiency in respect to time and resources affecting customers, comprehensive information reflecting a full consideration of the facts and circumstances and there is coherence of rational process that can be explained to others and made understandable (Laudon & Laudon, 2013:358). The Department of Health provides feedback 60 days after the reporting period to provinces, national level line and programme managers for planning, presentations and reports (National Department of Health, 2013:17).

3.5 LEGISLATION SUPPORTING QUALITY INFORMATION MANAGEMENT

In terms of Chapter 5 of the Public Administration Management Act (11 of 2014) (hereinafter referred to as PAMA, 2014), Section 14(a), the use of information and communication technologies in public administration must occur in a manner which ensures the interoperability of its information systems with information systems of other institutions to enhance internal efficiency or service delivery; eliminate unnecessary duplication of information and communication technologies in public administration and ensure security of information systems (South Africa, 2014). Furthermore, Chapter 5 of the Public Administration Management Act (11 of 2014), Sections 14(b)(c) and (d) emphasise the use of information and communication technologies to develop and enhance the delivery of services in the public administration; align the use of information and communication technologies by public administrators to achieve optimal service delivery and promote the access to public services through the use of information and communication technologies (South Africa, 2014). From the Department of Health's point of view, the importance of quality information management is described in the District Health Management Information Policy of 2011. The policy argues that all provinces, districts, sub-districts and health facilities ought to harmonise information across the country and formalise the resources required for effective implementation of a well-functioning District Health Management Information System (National Department of Health, 2011:13).

The Protection of Information Act (84 of 1982) (hereinafter referred to as the Protection of Information Act, 1982), provides for the protection from disclosure of certain information. In terms of Section 3(a) the prohibition of obtaining and disclosure of certain information refers to obtaining or receiving any secret official code or password or any document, article or information used, kept or obtained in a prohibited area. Section 14 of the Protection of Information Act (84 of 1982) defines a prohibited area as any place or area where loss, damage and disruption of information can occur. Section 4(b)(111) furthermore prohibits the disclosure of certain information which has been entrusted in confidence to a member of the public by a person holding office in public administration. Section 4(b)(aa) refers to disclosure of information to any person other than a person authorised to disclose it or to whom it may be lawfully disclosed for the interest of the public (South Africa, 1982). The implication of the Protection of Information Act (84 of 1982) is that a quality information management process emphasises security with reference to policies, procedures and technical measures used to prevent unauthorised access to information.

The Protection of Personal Information Act (4 of 2013)(hereinafter referred to as the POPI Act, 2013), promotes the protection of personal information processed by public or private entities to establish certain requirements for processing personal information required by an information regulator to perform duties or functions in terms of the act. Section 40(1)(A)(i) provides for the power, duties and functions of the information regulator to promote an understanding and acceptance of the conditions for the lawful processing of personal information. Chapter 3 of the Protection of Personal Information Act (4 of 2013) relates to conditions for lawful processing of personal information and Section 5(16)(1) refers to quality of information whereby a responsible party must take reasonably practicable steps to ensure that personal information is complete, accurate and updated where necessary (South Africa, 2013). Different types of information collected within the public service include employee information processed through the Personnel and Salary System (PERSAL), finance information processed through the basic accounting system (BAS) and for the Department of Health, health service delivery information which is processed through the DHIS. In all these systems the department should comply with quality information management dimensions.

The National Health Act (61 of 2003)(hereinafter referred to as the National Health Act, 2003), which was described in Chapter 1, furthermore prescribes a framework to unite the various elements of the national health system towards achieving a common goal to actively promote and improve the national health system in South Africa. The National Health Act (61 of 2003) prescribes the delivery of quality health care services within national guidelines, norms and standards including quality information management (South Africa, 2003).

The Department of Health developed a District Health Management Information System (DHMIS) Policy, 2011, to provide the health managers at national, provincial, district and facility levels with full ownership of the DHIS. The DHMIS Policy focuses on priority areas, with reference to health information coordination and leadership, a national health indicator data set, data management, data security, data analysis and information output, information dissemination and use, as well as health information system resources (Department of Health, 2011:6). The goal of the Department of Health Information System is the production of relevant, good quality data for processing into quality information for making transparent and evidence based decisions for health services interventions (Department of Health, 2011:16).

The National Development Plan 2030 advocates for access to information technology infrastructure to meet the needs of the public in order to provide a range of services required for economic and social participation. Organisations such as the Department of Health will have access to data for performance monitoring and improvements (National Planning Commission, 2011:170). The Department of Health data is captured online on the DHIS using an information technology infrastructure through 3G where the information technology infrastructure is not accessible (Department of Health, 2012:12).

Section 4 Subsection 4.2.4 of the North West Provincial Development Plan 2030 also refers to the utilisation and accelerated deployment of Information and Communication Technology (ICT) infrastructure where access is challenging. ICT promotes access to information about public services rendered such as health care monitoring for outbreak of diseases, access to centralised chronic medications dispensing and distribution (CCMDD) and other health related services (North West Planning Commission,

2013:99). The general deduction from the above legislative framework is that this study, which focuses on quality information management, is aligned to the North West Provincial Development Plan 2030 which supports access to quality information about public services rendered such as health care services.

3.6 THE ROLE-PLAYERS INVOLVED IN QUALITY INFORMATION MANAGEMENT

Top management provides leadership in tabling the vision statement of what the organisation wants to do, its mission, values, goals and objectives, as it also relates to quality information management. Senior management is responsible for planning quality information management processes, controlling uncertainty and reducing risks by guaranteeing adherence to the plan. The senior management provides leadership in defining the organisation's purpose, objectives and processes consistent with quality information management policy (Oz, 2004:370). An information management policy is defined as the formal rules governing the maintenance, distribution and use of information within the organisation (Laudon & Laudon, 2013:468). Planning includes resource planning in relation to the budget and human resources, while a quality information management manual describes the process that enables communication of the plan to meet the objectives of the organisation (Hoyle, 2007:83). Quality information management resources also refer to the procurement of registers, data collection tools, computers, information systems, information technology network systems and related user manuals (Singh, Geetika, & Dubey, 2011:530). Senior managers control the plan by monitoring ongoing activities with planned outcomes and taking actions to determine reasons for variance. The plan identifies the responsibilities and authority to enhance accountability, thus the employer establishes internal communication to make certain that everyone understands what they are required to achieve, according to standards for quality information management (Mellor, 2011:19). The senior management leads in analysing data obtained from documented control measures to identify opportunities for continuous improvement in ensuring quality information management (Singh *et al.*, 2011:531).

The employees are responsible and accountable for resource management within the organisation. Financial resources are controlled by the finance unit of the organisation,

including processes ranging from demand planning, alignment of budget to the demand plan, monitoring that procurements are in line with the demand plan and financial accountability through production of finance reports according to the Public Finance Management Act, 1 of 1999 (South Africa, 1999). A demand plan is an operational supply chain management (SCM) process used to create reliable procurement forecasts of goods and services (Sultana & Shathi, 2010:3). The supply chain management unit accounts for purchases, and such material and equipment are maintained by information technicians. Information technicians update antivirus software, establish help-desks to provide support with key information system issues and compile datasets for users whose requests for information have been approved (Mellor, 2011:35).

The human resource development unit manages staff development and training, enabling them to be more responsible, as well as ensuring control over quality information management (Stair & Reynolds, 2003:47). Employees at operational level generate data in line with standards for quality information management (Department of Health 2012:10). For the purpose of this study, employees at operational level are health professionals with reference to medical doctors, dentists and professional nurses. Data capturers capture validated data into the information system (Department of Health 2013:9). Data capturers, also referred to as data officers, are responsible for capturing data at health facilities into the district health information system (DHIS) (Department of Health 2011:32). Information officers provide health information system related leadership, guidance, capacity building on identified data quality, monitoring and reporting skills, mentoring and support to provinces, district, sub-district and facilities employees, as well as programme managers, in order to check on aspects such as facility classifications, data quality, filing, storage of data and implementation of policies and guidelines, tracing and verification of data in daily tick registers, monthly summary forms and the DHIS (National Department of Health, 2013:15). The line managers' responsibility is to interpret, describe, summarise and compare information, therefore adding knowledge based on which decisions regarding public health services are made (Raisinghani & Kaiser, 2011:472).

An organisation such the Department of Health has to establish and formalise a quality management system in order to achieve quality information as the product. Quality

management systems support the organisational structure and are implemented through procedures, processes and required resources to ensure quality information management (Hoyle, 2007:120). The organisational structure refers to different sub-units and how they affect the information system. The organisational structure is a managerial hierarchy depicting decision making and authority from the strategic point of view to operational management and employees responsible for functions of the information system (Stair & Reynolds, 2003:47). A quality information management system's integrity is maintained by linking activities of management review of information, internal audit and documented control measures of operation to standards set for quality data (Pearlson, & Saunders, 2013:44).

The Auditor General measures compliance to defined processes and procedures to ensure that deliverables meet requirements for authenticity of data (Hoyle, 2007:35). Quality information management systems are audited invariably by internal auditors to check compliance to the standards prior to the Auditor General's auditing and opinion (South Africa, 2004). The deduction from the above is that quality information management necessitates a link between the responsibilities of individuals from top management who have pivotal roles to establish quality information management policies and goals. These individuals also provide the resources necessary for information management systems and guide the pursuit of continuous performance improvement from the health professionals where data is generated. At this point the data is captured into available standard data collection tools availed through the supply chain management procurement process, to comply with standards and operations of quality information management.

3.7 BENEFITS OF QUALITY INFORMATION MANAGEMENT

Quality information management is a valuable resource contributing to understanding and effective management of an organisation. The benefit of quality information management is the collection of data and information that is relevant to the objectives of the organisation, which informs or improves the resultant decisions (Lucey, 2005:18). Understandably relevant quality information adds value to the user and decisions within the organisation. It also ensures the production of data and information that is accurate,

reliable and accessible for effective decision making, based on the analysis of authentic data and information. Quality information management provides knowledge and understanding of the use of information to support specific tasks or decisions (Knight & Burn, 2005:162).

One of the previously mentioned benefits of quality information management is to improve decision making for public administrators and the organisation from senior, middle to operational management. The different types of decisions are classified as unstructured, structured and semi-structured (Laudon & Laudon, 2013:355). Unstructured decisions are those in which decision makers at senior management level present a narrative of important judgements, appraisals or insights to problem solving. The decisions of senior management affect the whole division or the entire organisation and have a long standing impact. The unstructured data comes from internal and external sources such as meeting discussions, email messages, instant messaging records, textual documents, graphical presentations, mass media and bulletins (Oz, 2004:370). Structured decisions are routine definite procedures of operational management for handling pre-programmed processes within the organisation. Structured decisions emanate from structured data which are numbers and facts that can be conveniently stored and retrieved in an orderly manner for operations and decision making over a short period of time (Oz, 2004:368). The sources of structured data are internal files and databases that capture transactions (Knight & Burn, 2005:166). Semi-structured decisions have elements of both unstructured and structured decisions by middle management, where part of the problem has a clear answer provided by standard practice (Stair & Reynolds, 2006:392).

Quality information management furthermore guides the decision making process with reference to intelligence, design, choice and implementation (Laudon & Laudon, 2013:354). Intelligence consists of discovering, recognising and understanding why challenges and problems are happening in the organisation. Intelligence is brought about by reporting, integrating and analysing comprehensive accurate data from the organisation, in order to make coherent decisions. Integrating data includes systems integration to look at the entire information needs of an organisation at different units, and users can access different types of information via a single interface (Oz,

2004:610). Design involves analysis of information to explore various solutions to the problem. Choice consists of informed decision making based on quality information. Implementation involves making an informed decision and the use of quality information for continuous monitoring and evaluation of the decision taken (Stair & Reynolds, 2006:392).

Thus, quality information management reduces uncertainty, enhances understanding and provides relevant knowledge in planning and decision making. It is an aid to monitoring, evaluation and control by providing information about performance and the extent of deviation from planned levels of performance or targets (Kerr et al., 2007:1018). Quality information management is a means of communication about developments, strategies, forecasts and imminent changes (Laudon & Laudon, 2013:164). For the purpose of this study the benefits of quality information management are positioned in relation to monitoring and evaluation of the performance of health care service delivery against the allocated budget for compensation of employees, goods and services, as well as households, and the development of quality improvement plans where performance is below targets.

3.8 CONCLUSION

This chapter emphasised compliance to standards of quality information management with reference to accuracy, completeness, economy, reliability, relevance, simplicity, timeliness, verifiability, accessibility and security for planning and decision making. There are knowledge requirements for quality information management in relation to the activities of the organisation, the nature of data that is produced, understanding the systems concepts and the required resources with regard to people, computers and information technology infrastructure. The chapter provided for a theoretical framework in understanding concepts such as quality, data, information, management and systems. The chapter furthermore described the requirements of the legislative framework in supporting quality information management. In the next chapter an analysis of the case will be presented, drawing from both literature and empirically collected data.

CHAPTER 4: AN ANALYSIS OF THE DEVELOPMENT AND TRAINING OF HEALTH CARE PRACTITIONERS FOR QUALITY INFORMATION MANAGEMENT

4.1 INTRODUCTION

This chapter analyses the current challenges in terms of promoting quality information management through appropriate human resource development and training of primary health care practitioners in the North West Department of Health. The chapter is a description and analysis of the findings derived from case study data collection conducted in the North West Department of Health. The chapter integrates quantitative and qualitative data, in order to answer the questions in Chapter 1 regarding the current challenges in terms of developing and training primary health care practitioners for quality information management in the North West Department of Health successfully.

4.2 RESEARCH METHODOLOGY

As was described in Chapter 1, the study followed a mixed method approach as its research strategy. The following sections describe how the strategy was implemented.

4.2.1 Approach

A mixed method research approach is an approach in which the researcher collects and analyses data, integrates the findings and draws deductions using both quantitative and qualitative methods (Bickman & Rog, 2009:284). Integrating the findings refers to the efficiency of evaluating possible similarities and differences across various components of research questions to provide credible, complete and explicit explanations for variation and similarities in order to draw conclusions from the findings (Leedy & Ormrod, 2013:258). Qualitative data, words, pictures and narratives can be combined with quantitative numerical data on the same issue allowing research results to be generalised. Qualitative data adds an in-depth narrative understanding to quantitative research results (Longhi & Nandi, 2015:13).

The purpose of using mixed method research is to (Orna & Stevens, 2000:88):

- complement views of the same phenomenon and further understanding of the research problem by utilising both quantitative and qualitative data;
- make sure that a complete, meaningful picture of the phenomenon is obtained;
- develop and explain the understanding obtained from previous questions;
- assess the credibility of deductions obtained from one approach;
- compensate for the weakness of one approach by using the other and compare and contrast divergent pictures of the same phenomenon; and
- initiate a new study from the findings in order to add new insight to an existing phenomenon under investigation and expansion of the breadth and range of the enquiry for further research endeavours.

For the purpose of this study the mixed method approach allowed for an enhanced understanding of the training and development challenges associated with ensuring quality information management in the North West Department of Health.

4.2.2 Research design

The study used case study research design to explore and understand the complex issues pertaining to training and development challenges associated with ensuring quality information management in the North West Department of Health, with the intention of describing and explaining the phenomenon of interest. An in-depth study of how health care professionals, namely medical doctors, dentists and professional nurses in the North West Department of Health primary health care facilities ensure quality information management was conducted. A close examination of data from the health practitioners as the participants of the study went beyond the quantitative statistical results by including analysis of both quantitative and qualitative data.

4.2.3 Sampling

The research population of the primary health care practitioners in the North West Department of Health were defined as the main focus of this scientific inquiry. Data was collected from the research participants in order to obtain information on the research question in Chapter 1 pertaining to the current challenges in terms of developing and training primary health care practitioners for quality information management. In this scientific study it was unreasonable and too costly to involve all the primary health care practitioners in the North West Department of Health, so the researchers relied on information collected from a sample of the total population. A representative sample of primary health care practitioners in the North West Department of Health was selected through stratified random sampling, whereby in the context of this study, every member of the population had an equal chance of being selected.

The study population was divided into strata related to their occupational designations: medical practitioners, dentists and professional nurses. As a result, a full cross section of the population was accomplished. The table below portrays the planned sample size of 179 and the actual research sample from the sampling frame of 1783 representative of strata, formed on the basis of members sharing attributes or characteristics of primary health care practitioners in the North West Department of Health.

Table 1-2 Profile of the respondents

Category of health facilities and primary health care practitioners	Total number of filled posts representing the population	Planned random sample from a percentage of total sample	10% sample	Actual random sample
Dental practitioners	41	4		7
Medical practitioners	48	5		10
Professional nurses in community health centres and Community health clinics	1694	170		101

Source: Personnel and Salary System (PERSAL)

The figure below illustrates the percentage of the actual random sample of medical doctors referred to as medical practitioner respondent (MPR), dentists referred to as dental practitioner respondent (DPR) and professional nurses referred to as professional nurse respondent (PNR).

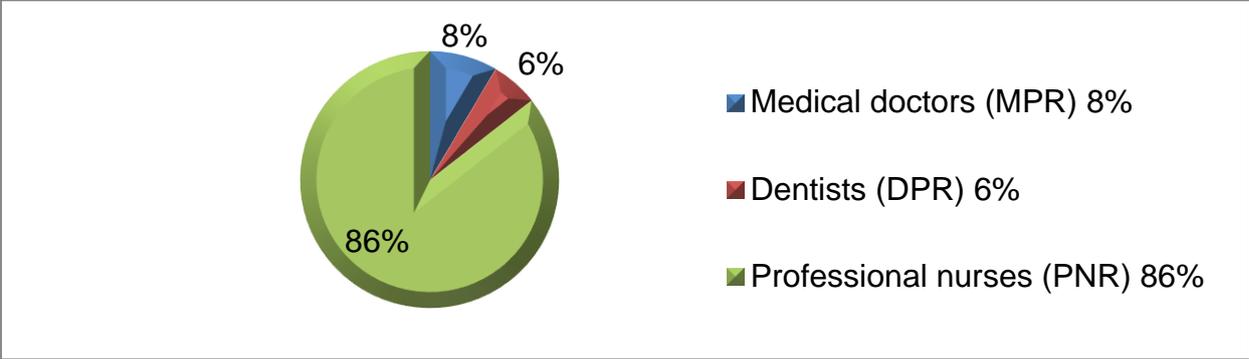


Figure 4.1 Respondents

A response rate of 65,9% from a sample of the abovementioned primary health care practitioners in the North West Department of Health was achieved. In identifying the strata of respondents during analysis a designator was assigned. Medical practitioner questionnaire respondents are referred to as MPR numbered 1-10, DPR refers to dental practitioner questionnaire respondents numbered 1-7, and PNR refers to professional nurse questionnaire respondents numbered 1-101. Therefore the verbatim quotes from respondents included in the analysis specify the designator of each stratum, number of respondent and year.

4.2.4 Semi-structured questionnaires

The quality of deductions between quantitative and qualitative strands of the study depend on the quality of data collected (Bickman & Rog, 2009:309). The importance of quality in research is to use the most appropriate procedure for answering research questions in relation to (Leedy & Ormrod, 2013:259):

- suitability of data collection tools to potentially answer the research questions;

- the degree to which quantitative data complements qualitative aspects of the study or vice versa;
- adequacy and consistency in implementing data collection tools;
- completeness in collecting, analysing as well as interpreting both quantitative and qualitative data;
- adequacy of data analysis techniques for answering the research questions; and
- the degree to which credible thought is given on the basis of obtained results.

In this study quantitative and qualitative data was collected using the same data collection method, namely a semi-structured questionnaire. The method allowed the respondents to self-report their attitudes and feelings about current challenges in the training of health care practitioners for quality information management. Both closed-ended and open-ended questions were used to collect data. Thereafter the researcher analysed the answers of the respondents and made decisions supported by facts and the conclusions legitimately drawn from the findings (Orna & Stevens, 2000:104).

The semi-structured questionnaire was first piloted with a small sample that is representative of the study population, in order to test the questionnaire empirically. The pilot study was conducted to determine participants' understanding of the questions, instructions and meaning of the words; and to determine the time required for completing the questionnaire (Arain *et al.*, 2010:4). Piloting was carried out with two dentists, two medical doctors and four professional nurses in the four districts of the North West Department of Health. Responses for the pilot study are included in the total study population. A total of 118 respondents participated in the study. The closed-ended and open-ended questions gathered information on a variety of issues relating to training of primary health care practitioners for quality information management.

The following section provides the analysis of data collected using thematic analysis, as argued in Chapter 1.

4.3 QUALITY INFORMATION MANAGEMENT

Quality information management as defined in Chapter 3 of the study is the degree of excellence free from flaws or imperfection and conformance to the characteristics of valuable information with reference to accuracy, reliability, consistency, timeliness, completeness, accessibility, verifiable, objectivity and relevance (Raisinghani & Kaiser, 2011:473). According to literature, quality data is the extent to which data conforms to the quality standards perspective with reference to accuracy, consistency, timeliness, completeness, accessibility, objectiveness and relevance (Kerr *et al.*, 2007:1018). Quality information management refers to the production of timely, required, high quality information with a zero defect from the information source where data is generated. As a result, quality information management in public administration supports decision making and accountability in the management process for planning, defining, organising, monitoring and performance management.

The process of quality information management entails a set of interrelated components that collect, manipulate and disseminate data and information and provide feedback to accomplish the objectives and goals of the organisation (Mellor, 2011:117). The role players involved in quality information management are senior management, who provide leadership in defining the organisation's policy, purpose, objectives, processes and resources consistent with quality information management. Therefore, quality information management benefits the objectives of the organisation and adds value to decision making.

The Department of Health is accountable for quality information management. Using information gathered through the semi structured questionnaires administered to the primary health care practitioners: medical doctors, dentists and professional nurses, quantitative inquiries and qualitative responses were analysed in order to capture the state of quality information management in the North West Department of Health. The responses are central to the operation of the primary health care practitioners who are generating data into the registers which are primary source documents. The objective was to determine the current challenges in terms of developing and training the aforementioned primary health care practitioners for quality information management.

4.3.1 Defining quality information management

Qualitative analysis of data was conducted to determine the degree to which credible thought is given on the basis of obtained results. The respondents were expected to indicate what, in their opinion, constitutes quality information management. The respondents stated that in their opinion, quality information management is “verified collected data from various sources into information which can be analysed, reported and used without errors” (PNR 3, 2017). Quality information management is “when information is recorded and verified before capturing” (PNR 5, 2017). Quality information management is “the information that is generated from the quality data management and encompasses elements of quality management” (PNR 8, 2017). Another respondent indicated that quality information management is “doing the right things right the first time” (PNR 10, 2017), while PNR 77 (2017) stated that quality information management is “accurate, precise recording, verification and validation by respective officials”. PNR 101 (2017) argued that quality information management is “complete and correct information verified by quality information managers”. The abovementioned opinions of professional nurses imply that their role in quality information management is related to the process and ensuring that the correct data is recorded and verified through the correct procedures. According to the medical doctors’ opinions, quality information management is “a good concrete statistical reporting” (MPR 1, 2017), “accurate data capturing, accurate filling and accurate management and administration” (MPR 3, 2017), “updating, good record keeping, clear records, information technology (IT), consistency and knowledge” (MPR 4, 2017), “a way of making available information that is accurate, efficient, and integral” (MPR 5, 2017), “accessible and easily understood processes and procedures geared towards acquisition, capturing, storage, analysis and dissemination of information emanating from contact with service users” (MPR 9, 2017) and “a specific programme on collection, storage, retrieval of patient information for use in management” (MPR 10, 2017). According to the dentist’s opinions however; quality information management is “the correct, comprehensive information of individual institutions” (DPR 1, 2017), “the effective acquisition, collection, storage and use of information within an organisation and the process by which information is shared to achieve the needs, targets and effectiveness required for success” (DPR 2, 2017), “the accurate and detailed recording

of information” (DPR 3, 2017), “the proper recording after every procedure and patients’ details” (DPR 4, 2017), “information recording, collection, and management of information for references” (DPR 6, 2017) and “a tool used to assist in providing quality care” (DPR 7, 2017).

While some elements of quality information management with reference to accuracy, verification and accessibility were mentioned, the study acknowledges that in its understanding of quality information management, primary health care practitioners see this as basically the gathering, capturing and management of information. The influence that quality information management has on the ability to make accurate decisions was not identified and this may imply that quality information management is merely seen as a function and not as an integral part of ensuring the effectiveness and efficiency of medical services.

Some professional nurses, however, were able to identify the connection between quality information management and improved service delivery. PNR 88 (2017) stated that “quality information management is when data on paper or on a computer assists in the improvement of service delivery”, while PNR 91 (2017) argued that “quality information management is information that management can use to decide on a plan of action for provision of relevant resources and improved service delivery”. PNR 81 (2017) contended that “quality information management is the preparation of data, good reporting of data, capturing, analysing and using the information to identify gaps and timely intervention”. The professional nurses associated quality information management with planning, even though the definitions provided were somewhat ambiguous.

In the responses there is reference to quality information management concepts such as appropriate proper recording of data elements, accurate reporting, timeliness, verification of data, analysis of data, management of data without errors, truthful and trustworthy information, standards for information auditing, safety of information, availability of resources with reference to primary health care head count registers, primary health care tick registers, electronic data capturing devices, personnel and finances. This means that the development and training of the practitioners for quality

information management can assist with consistency in information management and strengthening evaluation of the authenticity of data, as well as mentoring and coaching of primary healthcare practitioners.

Following the above definitions of what is considered quality information management, the respondents indicated what, in their opinion, ensures quality information management. The respondents stated that “quality information management is ensured by the use of identity (ID) numbers for retrieval of patients’ records, consistency of data collection, consistent daily capturing and daily verification of data for completeness, correctness and accuracy by the manager and correction of discrepancies in time” (PNR 45, 2017). “Quality information management is ensured by correct management of reception head count and a primary health care comprehensive tick register to record all aspects of patient details and treatment planned, attaching signatures to certify that data is verified and keeping patient’s records safe” (PNR 93, 2017). “Quality information management is ensured by presenting the relevant, up to date, complete, correct, accurate, truthful raw data that has been generated from the primary sources with reference to the registers” (PNR 7, 2017). “Quality information management is ensured by verifications, no duplication, updates and availability of source documents as portfolios of evidence (POE) for regular auditing” (PNR 36, 2017). “Quality information management is ensured by collecting data according to the manuals with reference to consistent proper recording of information at the correct time and good communication” (DPR 1, 2017). “Quality information management is ensured by good reporting, proper record keeping, secure storage and easy retrieval of information” (DPR 6, 2017).

Additionally, the respondents further explained that quality information management is ensured by “daily data validation and verification by the operational manager and data capture, as well as regular monitoring and evaluation of information during monthly reviews”(PNR 30, 2017). “Quality information management is ensured by accessibility and continuous dissemination of information to all colleagues within the organisation” (PNR 44, 2017). “Quality information management is ensured by being able to access data on the DHIS” (PNR 91, 2017). The respondents, thus, indicated that ensuring quality information management is associated with access, using the systems correctly

and ensuring that those responsible for quality information management complete the necessary verifications.

According to PNR 9 (2017), quality information management is ensured by “training of health professionals on quality information management standards and operating procedures and making use of them appropriately, in order to acquire the knowledge and skill of the tools used for data collection”, whereas PNR 51 (2017) maintained that “quality information management is ensured by formal continuous proper training and education of all employees, as well as in-service training of data capturers on information management at least once a quarter”. “Quality information management is ensured by induction on the District Health Information Management Policy, revision of the old policy and availability of guidelines which are user friendly” (PNR 34, 2017). According to MPR 3 (2017), “quality information management is ensured by well-educated health practitioners and information management policies”. DPR 2 (2017) added an interesting dimension by stating that “quality information management is ensured through benchmark/standards, a description of the procedure in which operations of the organisation are run, with predetermined set goals, objectives, targets and a mission that the organisation aims to achieve”, thus indicating the need to measure quality against a standard for increased productivity of the organisation. PNR 6 (2017) contended that “quality information management is ensured by a number of learning opportunities so that knowledge and skills can be attained within the structure of the organisation”. MPR 7 (2017) furthermore stated that “quality information management is ensured by training according to a skills development plan so that everybody is on board”, while PNR 9 (2017) argued that “quality information management is ensured by training personnel in the quality assurance process and mentoring of all users on information management”. The quotes provided above all have in common the identification of appropriate training and development to ensure quality information management. The study argues that health care practitioners seem to understand the need for appropriate training and development and the influence that these will have on the ability of the organisation to ensure effective and efficient service delivery.

Apart from the emphasis on training and development, PNR 12 (2017) also mentioned that “quality information management is ensured by dedication, commitment, available human resources - particularly nurses - equipment, clinical stationery, the tick registers at the facilities and budgeting for reliable data collection tools”. “Quality information management is ensured by proper communication between the employer and the employee, continuous collaboration of information and planning together” (PNR 19, 2017), whereas according to PNR 20 (2017) “quality information management is ensured by available information resources with reference to computers for electronic data capturing and DHIS registers in the facility for each professional nurse, and information technology (IT) for information to be sent electronically and on time”. Moreover, “Quality information management is ensured by providing information that can be used to improve service delivery and has to be verified from sources (PNR 28, 2017)”. The respondents thus indicated that ensuring quality information management is also dependent on having the correct process, equipment and IT available to ensure appropriate capturing and use of data for enhanced service delivery.

4.3.2 Ensuring quality information management

Following the respondents’ opinions about what ensures quality information management, below are the responses regarding respondents’ perceptions of the process used in the consistent capturing of data in the daily reception headcount registers as source documents. According to the National Indicator Data Set (NIDS) (National Department of Health, 2017), the primary health care headcount is defined as counting each client once for each day that they appear at the facility, regardless of the number of services provided on that day. Figure 4.2 below illustrates the respondent’s perceptions regarding consistent capturing of data in the daily reception headcount register.

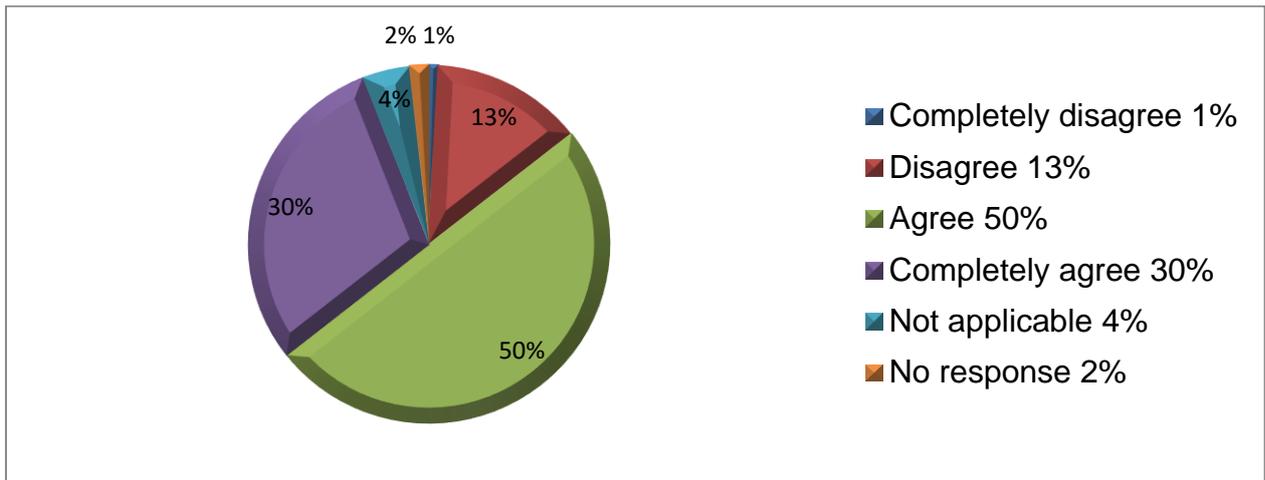


Figure 4.2: Consistent capturing of data in the daily reception headcount register

In response to the consistent capturing of data in the daily reception headcount register with the number of patients registered for that day, 1% of the respondents completely disagreed with the process, 13% disagreed, while 50% agreed and 30% completely agreed. The statement was not applicable to 4% of respondents and 2% of respondents did not respond to the question. A total of 14% of the respondents stated that there is inconsistency for capturing of data in the daily reception headcount register with the number of patients registered for that day, which leads to the under reporting of data. Following consistent capturing of data in the daily reception headcount register with the number of patients registered for that day, the respondents indicated whether the unit manager verifies the completeness of the daily reception headcount register prior to signing off on its authenticity.

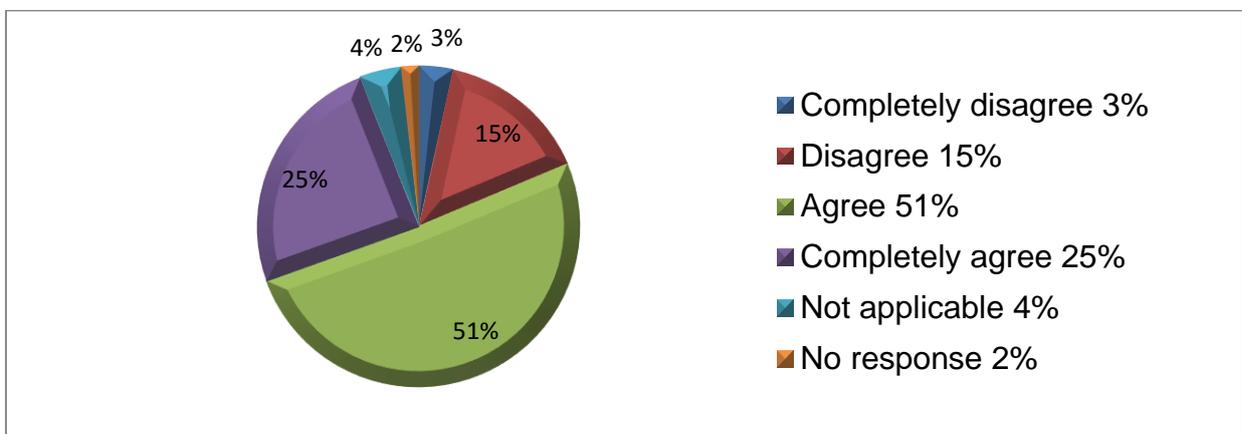


Figure 4.3: Verification of the completeness of daily reception headcount register prior to signing off on its authenticity

According to the DHIS standard operating procedure (National Department of Health, 2012), timely verification of data for accuracy and comprehensiveness is done daily. Verification of data is done by correlating the total number of registered files issued to patients for consultation by health practitioners, and the files returned to the reception for filing against the total number of patients registered at the reception daily headcount register. Figure 4.3 above illustrates the respondents' perceptions that the unit manager verifies the completeness of the daily reception headcount register prior to signing off on its authenticity.

Three percent of the respondents completely disagreed including 15% disagreed that the unit manager verifies the completeness of the daily reception headcount register prior to signing off on its authenticity. However, 51% of the respondents agreed and 25% completely agreed that verification of data is done prior to signing off on its authenticity. This was not applicable to 4% of respondents and 2% did not respond. Inconsistency with verification of data by the unit manager prior to signing off on its authenticity signifies that errors are missed or that data may be incomplete which affects the quality of the data captured. The following figure illustrates respondents' perceptions as to whether clinicians complete the necessary documentation immediately after having seen a patient.

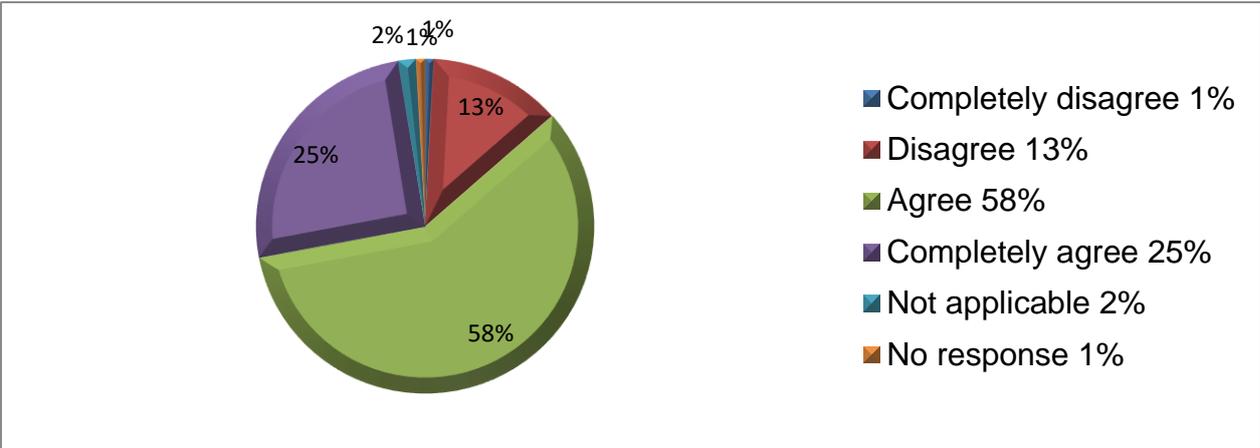


Figure 4.4: The clinician completes, immediately after consultation with patients' accurate data of the service rendered as indicated on the patient register

According to the DHIS standard operating procedure, (National Department of Health, 2012), the primary health care daily tick registers are the primary source documents required for data verification and audits. These registers are used for consistent recording of information from the patient folder. Figure 4.4 above illustrates the respondents' responses on whether the clinician completes, immediately after consultation with patients, accurate data of the service rendered as indicated on the patient register. One percent of the respondents completely disagreed and 13% disagreed that the clinician completes, immediately after consultation with patients, accurate data of the service rendered as indicated on the patient register, while 58% agreed and 25% completely agreed. This was not applicable to 2% of the respondents and 1% did not respond. There are probabilities of missing data as 1% of the respondents completely disagree and 13% disagree that the clinician completes accurate data of the service rendered as indicated on the patient register. Other respondents also said recoding was not applicable. While the majority of the respondents concur that the clinicians' complete records immediately after consultation, the argument can still be made that data may not be correct or complete if the clinicians did not receive proper training and development in ensuring quality information management. The following figure represents the results of respondents indicating whether unit managers verify the data as captured on a daily basis.

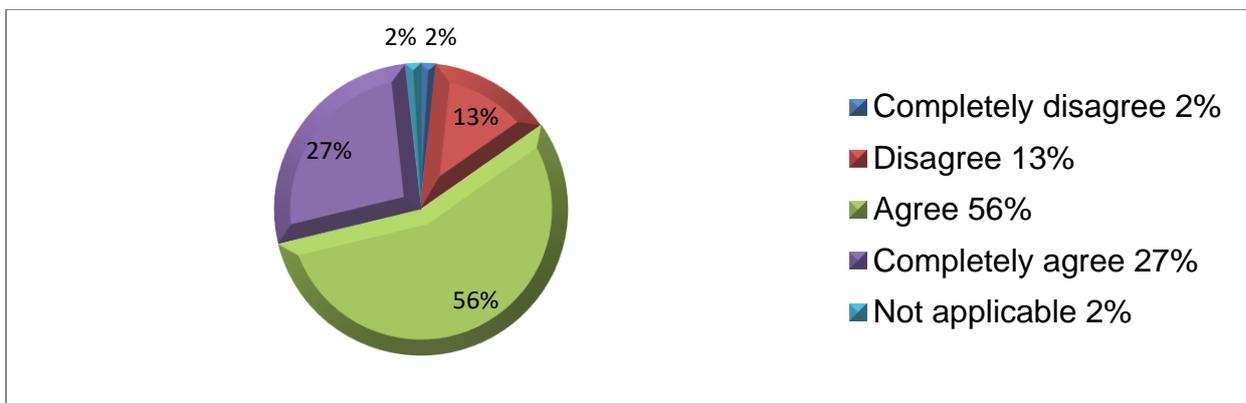


Figure 4.5: The relevant data recorded on the Primary Health Care (PHC) comprehensive daily tick register is verified by the unit manager

According to the DHIS standard operating procedure (National Department of Health, 2012), the unit manager’s responsibility is verification that data in registers and on summary forms correlates prior to being signed off. Data sign off refers to the practice where the person with the required authority agrees to the correctness and validity of the data (National Department of Health, 2012:18). Figure 4.5 above illustrates the respondents’ responses in that the relevant data recorded on the primary health care comprehensive daily tick register is verified by the unit manager. Two percent of the respondents completely disagreed and 13% disagreed that the relevant data recorded on the register is verified by the unit manager. Fifty-six percent of the respondents agreed and 27% completely agreed. Verification of relevant data recorded on the registers by the unit manager is not applicable to 2% of the respondents. Authenticity of data is not always justified, as a total of 15% of the respondents said that the relevant data recorded on the daily primary health care comprehensive tick register is not verified by the unit manager.

According to the DHIS standard operating procedure (National Department of Health, 2014), after a rapid data quality assessment, data is captured weekly online from the tally summary into the DHIS. Such data must be 100% complete and should contain no gaps or outliers without comments. The tally summary refers to the final form which is used to enter the data into the relevant database, which is the DHIS (National Department of Health, 2014:14). The figure below indicates the respondents’ responses regarding whether data is captured weekly from the tally summary into the DHIS.

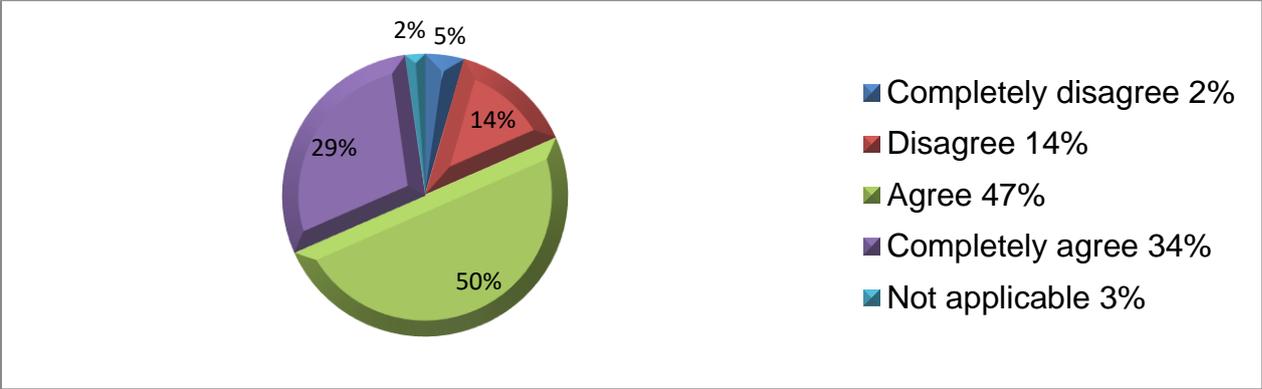


Figure 4.6: Data is captured weekly from the tally summary into the District Health Information System

Two percent of the respondents completely disagreed and 14% disagreed that the data is captured weekly from the tally summary into the DHIS, whereas 47% agreed and 34% of the respondents completely agreed that the data is captured weekly. Weekly capturing of data from the tally summary into the DHIS was not applicable to 3% of the respondents. While respondents may, in the majority, agree that data is captured into the DHIS, they were asked to indicate possible challenges in ensuring this.

The respondents contend that “information management resources are limited, sometimes not available, particularly supply of new registers are out of stock, frequent changing of registers is affecting the supply, there is a lack of equipment with reference to modems for internet connection, non-functional equipment, old computers, shortage of money, not enough time, lack of network in facilities are specific challenges experienced in producing or ensuring quality health information resulting in the job not being done to set standards” (PNR 10, 2017). PNR 88 (2017) also identified the “shortage of personnel including data capturers, experienced staff go away with their knowledge without sharing and there is no time to discuss information” as limiting factors. The “lack of time is a specific challenge experienced in producing or ensuring quality health information, as health professionals are doing a lot of activities which are not aligned to their job description” (PNR 14, 2017). “The challenges experienced in producing or ensuring quality health information are the lack of understanding and training on information management, reliance on other categories e.g. data capturers, information officers, inappropriate job allocation of non-clinical functions, there is inappropriate job allocation of non-clinical functions such as information management to clinicians whose core competence is clinical work” (MPR 8, 2017). The above indicates that challenges relate to resource constraints which in turn affect the quality of data captured in the DHIS.

While the aforementioned respondents identified resource challenges, the following respondents also identified challenges in relation to how data is captured. “The challenges experienced in producing or ensuring quality health information are incomplete records, poor reporting and missing data”(PNR 45, 2017).PNR 46(2017) furthermore stated that, “lack of information and skills were challenges experienced in producing or ensuring quality health information”, whereas PNR 90(2017) said that “the

tick register is not user friendly and daily manual completion of data is time consuming”. Other challenges experienced in producing or ensuring quality health information are “lack of understanding of the data elements, misinterpretation of indicators as they are not comprehended, resulting in lack of ticking or incorrect ticks in primary health care registers” (PNR 90, 2017). Additionally, PNR 87 (2017) explained that “the new system, Web DHIS, is very inaccurate and not user friendly, as there are few internet connections”.

In support of the above, the respondents said that “the facility setup is a specific challenge experienced in producing or ensuring quality health information because the constant flow of patients makes it hard for the staff to record everything they are doing on the patients; consequently, there is incomplete data and wrong capturing”(PNR 25, 2017).According to DPR 5 (2017), “mishandling of patients files, not having ideal storage for records, books and computers is a specific challenge experienced in producing or ensuring quality health information”. Over and above this, PNR 28 (2017) also said “there is no dedication to, involvement with and commitment of all to accurate record keeping due to lack of resources, not having enough or sufficient equipment, no support from mentors and no data manager”. Other specific challenges experienced are that “there are not enough meetings where the decisions regarding processes to producing and ensuring quality health information are made” (DPR 2, 2017).

The respondents further said that “some health practitioners are not computer literate, and are thus incompetent on producing or ensuring quality health information” (PNR 2, 2017). PNR 20 (2017) also clarified that “training on the District Health Information System (DHIS) is challenging, some indicators have age limits which makes the facility or sub-district underperform. An example is immunisation of babies at 10 weeks, or women under 30 years’ old who have done PAP smears for cervical cancer screening. The facilities are unable to record those patients, and their reason for visiting the clinic on DHIS, thus affecting calculation of the specific statistics”. The abovementioned challenges relate to the understanding and use of the official systems and processes put in place to ensure quality information management. Apart from the challenges, the respondents also identified a lack of training and development as influential in ensuring quality information management.

According to DPR 6 (2017), “inadequate training on changes regarding information management is a specific challenge experienced in producing or ensuring quality health information, as well as a lack of knowledge and skill in good record keeping, and misplaced patient files with no track of the previous consultation”. Besides inadequate training on information management “professional nurses are not attending workshops and in-service training due to shortages of staff” (PNR 41, 2017). “The interpretation of available information is a challenge, as the expertise of analysing data in an organisation is lacking in the department for clinical staff”(PNR 38, 2017). MPR 8(2017) added that “there is lack of understanding and training on information management, managers are not trained on information systems, both Web DHIS and Tier.net, and no formal training is in place for quality assurance for health information management. Considering their workload, health professionals are relying on other categories e.g. data capturers or information officers for information management”. Apart from the specific challenges experienced in producing or ensuring quality health information, the unit manager has to optimise quality of information management in a health facility. So while the study acknowledges that respondents indicate that verifications are done and data is accurately captured, the respondents also identified a number of challenges that affect the quality of information captured, which in turn affects the quality of health decisions made by the department.

According to the DHIS standard operating procedure (National Department of Health, 2012), the unit manager optimises DHIS data quality and use by means of spot checks weekly on patient clinical record reviews - a total of 10 records per month. Spot checks are conducted to ensure that validity of all reported performance against pre-determined objectives is adequately supported by documentation, and that the consultations occurred. The figure below provides the respondents’ views on whether the unit manager verifies the objectivity of the data recorded on the patient’s register from randomly selected patient’s files.

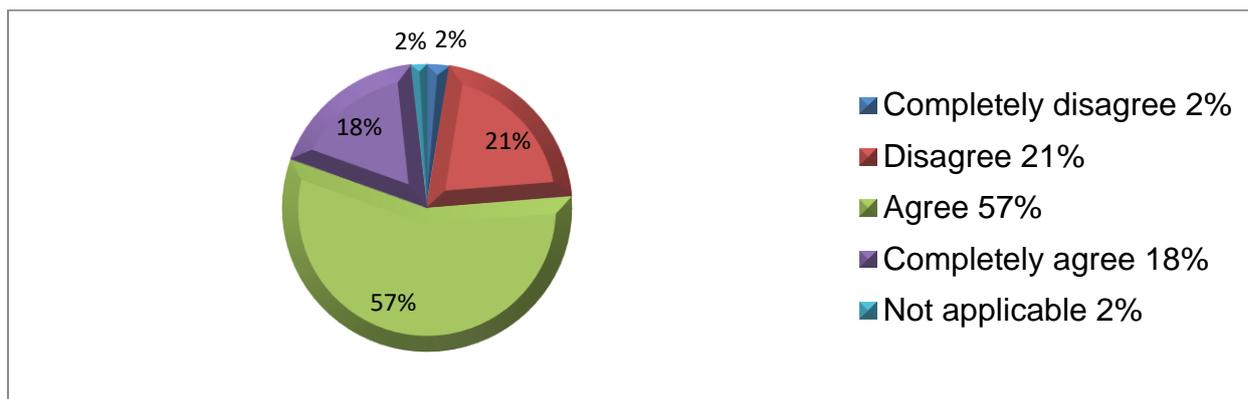


Figure 4.7: The unit manager verifies the objectivity of data recorded on the patient's register from randomly selected patient files

Two percent of the respondents completely disagreed and 21% disagreed that the unit manager verifies the objectivity of the data recorded on the patient's register from randomly selected patient files, whereas 57% of respondents agreed and 18% completely agreed. Two percent of the respondents did not respond. The above indicates that the majority of the respondents agree that appropriate spot checks are done to ensure the completeness of the data captured. However, there is inconsistency in the North West Department of Health regarding optimisation of DHIS data quality. Weekly patient clinical record reviews to verify the objectivity of the data recorded on the patient's register from randomly selected patient files was inconsistent.

According to the DHIS standard operating procedure (National Department of Health, 2013), optimising DHIS data quality and use includes that DHIS data is presented as a standing item on monthly sub-district meetings to review data and ensure that remedial interventions are implemented to improve data quality and service delivery where data shows inadequate performance. The figure below portrays the respondents' responses regarding health practitioners attending sub-district monthly health information performance review meetings.

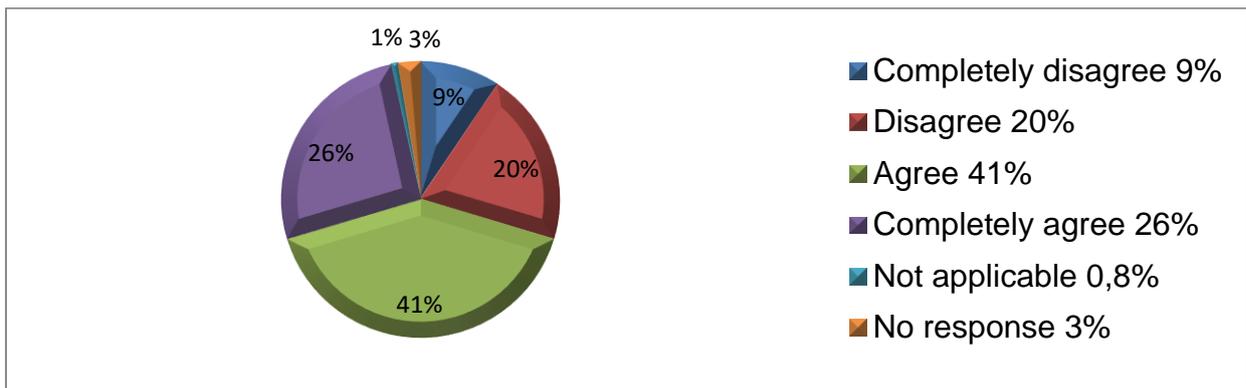


Figure 4.8: Health practitioners attend sub-district monthly health information performance review meetings

Nine percent of the respondents completely disagreed and 20% disagreed that they as a health practitioners attend sub-district monthly health information performance review meetings. Forty-one percent of the respondents agreed and 26% completely agreed that they attend sub-district monthly health information performance review meetings, but 0.8% of the respondents found it not applicable, and 3% of the respondents did not respond. There are inconsistencies in the attendance of monthly health information review meetings. Therefore, implementation of remedial interventions to improve data quality and service delivery where data shows inadequate performance may be inefficient and not properly communicated.

The respondents indicated the following challenges as to why primary health care practitioners are unable to attend sub-district monthly health information performance review meetings: “shortage of personnel due to shifts” (PNR 2, 2017), “the type of work requires more staff” (PNR 19, 2017), “lack of human resources” (MPR 2, 2017), “not skilled” (PNR 26, 2017), “lack of time” (MPR 1, 2017), “shortage of money and time” (MPR 3, 2017), “not enough meetings where the processes for producing and ensuring quality health information are made” (DPR 2, 2017), “not knowing what is expected from you” (PNR 66, 2017), “not informed” (PNR 76, 2017) and PNR 84 (2017) stated that “the National Health Indicator Data Set (NIDS) is not comprehended”. Thus, from the above, the argument is made that while the majority of the respondents indicated that meetings are attended, the general lack or shortage of staff may affect the ability of the managers to be present during the meetings. In addition, not understanding the

information management system or its indicators affects the ability of the staff to adequately report on and ensure quality information management.

The respondents were asked to suggest to the North West Department of Health how to enhance the quality of information management, as they were unable to attend sub-district monthly health information performance review meetings. The respondents suggested:

- “to discuss the organisational structure used to ensure quality information management and employ personnel so that there can be time for giving feedback, rotation of professional nurses to attend the sub-district reviews and updates, sharing of information and implementation of what has been discussed to achieve goals and objectives”
- (DPR 2, 2017).PNR 13 (2017) stated that the “appropriate appointment of competent staff in information management is recommended”.
- The respondents recommended that they should “employ leaders who are medically orientated so as to understand what is required and provide human resources to cover capturing of data during the weekends to enhance the quality of information management” (DPR 4, 2017).
- Furthermore, PNR 88 (2017) suggested that “the review of health information enables the health professionals to make informed decisions about the health care service delivery; hence access to District Health Information System (DHIS) is necessary for health practitioners, middle and senior managers to review health care system performance against the objectives and goals of the organisation”.

According to the DHIS standard operating procedure (National Department of Health, 2014), the responsibility of managers is to use DHIS data for evidence-based decision making to optimise public health or health status of the populations, health programmes and health care system performance, and developing, reporting, monitoring and evaluation of all legislated plans of the health sector. The figure below indicates the

respondents' responses in that health practitioners should access health information from the DHIS for planning and decision making.

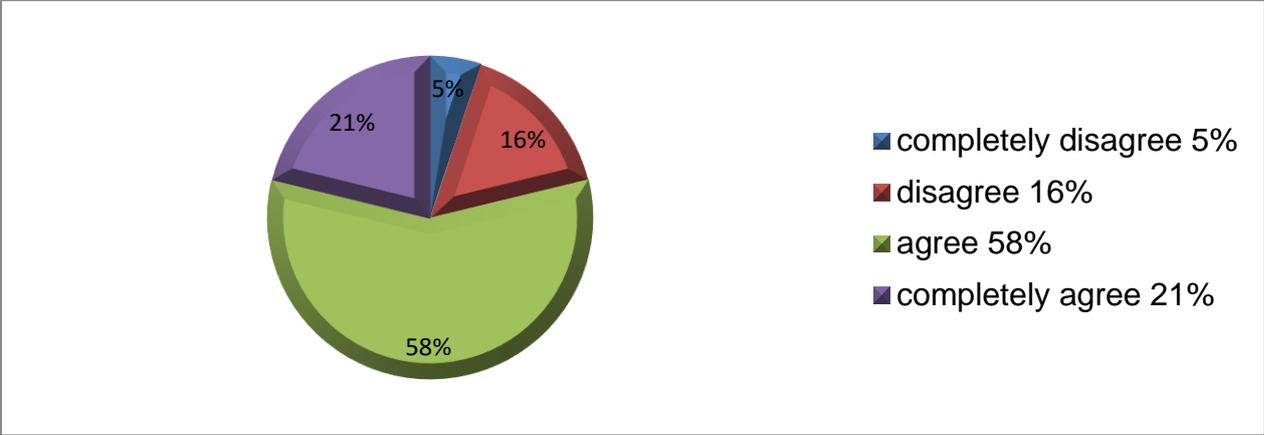


Figure 4.9: Health practitioners access health information from the District Health Information System for planning and decision making

Five percent of the respondents completely disagreed and 16% disagreed that health practitioners, such as themselves, access health information from the District Health Information System for planning and decision making. Fifty-eight percent of the participants agreed and 21% completely agreed. The statement justifies the importance of access to health information for planning and decision making. The respondents said that the factors contributing to the health practitioners not accessing health information from the District Health Information System for planning and decision making are that “they have not received any training regarding health information management”(PNR 21, 2017). “Mostly data capturers are trained on the District Health Information System. Health practitioners have never been invited for District Health Information System training” (PNR 68, 2017). Above all, PNR 18 (2017) stated that “health practitioners are expected to ensure quality information management without knowledge and skills”. PNR 19 (2017) furthermore said that “health information will improve patient care when shared to all parties when the sub-district has a complete skills plan to build capacity of health practitioners regarding health information management and technology”. “The quality information management can assist the health practitioners to plan and manage properly” (PNR 23, 2017), however PNR 9 (2017) explained that “limited sometimes unavailable resources such as the supply of new registers resulting in missing data are

also specific challenges experienced in producing or ensuring quality health information”.

In order to address the challenges experienced in generating and verifying quality health information, the primary health care practitioners were required to suggest to the North West Department of Health how to enhance the quality of information management. Regarding training, PNR 1 (2017) said that:

- they suggest “the North West Department of Health should provide a bigger budget so that all nurses can be properly trained with regard to new guidelines, information and basic computer skills to enhance the quality of information management”.
- PNR 3 (2017) suggested that “training of all professional nurses and administration clerks on information management should be done to reduce the workload of data capturers, and off-load some of the paperwork from primary health care practitioners, to ensure continuous capturing, as well as providing more workshops to assistant nurses to enhance the quality of information management”.
- PNR 6 (2017) argued that “all employees from the manager to sub-ordinates should undergo workshops and continuous training 6 monthly, in order to make sure quality information management is kept in a good state,”
- while PNR 19 (2017) noted that “proper, timely communication about the training on information management and other aspects done by professional nurses on each DHIS register should occur, so that the staff can prepare to ensure that every facility is represented”.
- The respondents in addition suggested to the North West Department of Health that they should “capacitate health practitioners on information technology (IT), the District Health Information System and Tier.net, through formal training or on the job training as well as continuous mentoring and coaching, to enhance the quality of information management” (MPR 4, 2017).
- Another respondent recommended “one to one internal in-service training in the clinic, empowering health practitioners about health service quality information

management, informing on the importance thereof, and monitoring by the North West Department of Health”(PNR 38, 2017).

- Above all, PNR 88 (2017) suggested “formal training of clinical staff in information management, and retaining experienced staff to teach new members and frequent weekly staff meetings to discuss problem cases related to mortality and morbidity.”

4.3.3 General observations

Quality information management is facilitated through the application of the generic public administration functions as discussed in Chapter 2. However, the participants’ responses indicate deficient knowledge on the subject of DHMIS policy. According to the National Department of Health (2012), the goals of the DHMIS Policy relate to issues such as the allocation of health information management resources, health information work methods specified in the standard operating procedures for facility level, and governance for DHMIS from national, provincial, district and sub-district level, in order to ensure health information coordination and leadership.

The DHMIS Policy specifies the structural arrangements for quality health information effectiveness in the organisation. These structural arrangements are such that the administration clerk at reception registers patient’s files on the reception headcount register. Primary health care practitioners are responsible for recording data on the clinical records as well as the primary health care comprehensive daily tick register. Data capturers summarise data from the primary health care comprehensive daily tick register into the weekly tally summary registers. The unit managers are assigned the authority to verify correctness of data captured in all the registers prior to capturing of data into the Web District Health Information System for processing data into information (National Department of Health, 2011). The unit manager ensures control by co-ordinating data related activities. The aim is to ensure a common understanding of quality information management work processes against the DHMIS standard operating procedures at facility level; however, the respondents maintained that there are inconsistencies for measuring performance against the standards with regard to verification of data.

The respondents' responses to challenges for ensuring quality information management were, amongst others, inadequate staffing. Therefore, there is limited time for the clinicians to complete, immediately after consultation with patients, accurate data of the service rendered as indicated on the primary health care comprehensive daily tick register. Staffing for the execution of the planned health information activities is necessary for individuals to accomplish an organisational goal intended for quality information management. Nonetheless, the respondents said that training of the existing health professionals on quality information management remains a challenge.

While the majority of the respondents indicated that they agreed with the principles put in place to ensure quality information management, their qualitative responses to specific challenges were indicative of the complexity of the problem. The respondents contended that amongst the specific challenges they experience in producing or ensuring quality health information are shortage of data collection tools from the sub-district stores, information resources are limited, sometimes not available, lack of modems and old computers. The North West Department of Health allocates the budget to programmes, such as Programme 2 in relation to primary health care activities. Therefore, financing for procurement of health information material resources such as computers, printers, registers and controlling access to available material resources is provided. Public financing for Programme 2 provides the means for a department such as the North West Department of Health to pursue DHMIS policy objectives. Financial performance is done transparently in terms of the Public Finance Management Act (1 of 1999) to account for spent funds. Consequently, it is imperative for health information coordination and leadership to take ownership and prioritise management of the DHMIS resources.

Data is captured on the Web DHIS to make certain that there is consistency of presenting information in the same format which is compatible with previous data. The respondents explained that there is inconsistent capturing of data into the Web DHIS due to the lack of internet connection, the use of one computer for two health information systems, namely Tier.net and the DHIS, as well as dysfunctional computers. The respondents suggested to the Department of Health that WIFI should be made available for all staff members, in order to enhance the quality of information

management. According to the North West Planning Commission (2013), referred to in Chapter 3 of this study, Section 4 Subsection 4.2.4 of the North West Provincial Development Plan 2030 prioritises accelerated deployment of Information and Communication Technology (ICT) infrastructure where access is challenging. The purpose of capturing data into the Web DHIS is to ensure compliance to the process of keeping information uniform, as it moves across a network and between various applications on a computer.

The respondents said that due to high work load and shortage of personnel, there are irregularities with capturing of data as promptly as possible after the clinical activity. Irregularities of data recording and capturing contribute to mismatch with data collection processes requirements. According to Askham *et al.* (2013), completeness is the extent to which information is not missing and is sufficiently extensive for the task at hand. However, information is available during monthly and quarterly health information performance reviews, apart from the fact that data is unverified. Unverified data is unreliable to support information needs and to influence service management decisions. There are inconsistencies with health professional attendance of the sub-district monthly health information performance review meetings; subsequently the importance of quality information management is undermined. According to Evans (2005), reliability is the extent to which information is correct and trustworthy; consequently, review of unreliable health information compromise timely use of information within a reasonable time period for planning and decision making.

Beyond attendance of monthly health information performance reviews, health professionals are unable to access health information from the District Health Information System for planning and decision making, as they are not trained on the DHIS. For that reason, health information is inaccessible to primary health care practitioners, as there is an unexplained need for access to health information for planning and decision making. According to Pearlson and Saunders (2013), accessible information refers to the extent to which information is available, easily obtained in the right format and at the right time to meet the needs of users. Consequently, the necessity of training and development of the primary healthcare practitioners on quality information management, in order to understand an association between an output of

clinical work during primary health care service delivery with planning and decision making in health service delivery is fundamental. The respondents defined the required resource relevant for quality information management as data collection tools with reference to DHIS registers. These are reception head count registers, primary health care comprehensive tick registers, data capturers' summary tools and clinical stationery, computers and network connection for consistent daily capturing of data. The respondents said that the required human resources range from data captures, administrative clerks to health professionals, thus the review of personnel structure to accommodate the required human resources necessary for the production of quality information necessitates the allocation of a bigger budget. An allocation of budget is informed by the required needs emanating from quality information. Health information from primary health care service delivery is required to motivate for resource allocation necessary for quality information management.

Public administrators in the Department of Health have a duty to collect and report performance information against a wide range of indicators, in order to ensure that information is applicable and helpful for monitoring and evaluation of health service delivery, planning and decision making. Planning includes budget allocation to meet the needs for health information resources informed by the analysis of quality information management. According to Bank (2000), performance indicators are reviewed on an annual basis to ensure that they are relevant to the requirements for changing needs in order to manage performance and drive improvement. In this study, the inputs to quality information management used for planning and decision making are the provision of objective data with evidence in relation to correlating documents as evidence of valid, relevant, accurate, reliable and completed data captured in the DHIS. According to Armstrong (2012), leadership is required in monitoring compliance to information management process flows from data input up to output, understanding and responding to challenges of data, and providing required financial, material and human resources necessary for quality information management. The following section provides the respondents' views about development and training of human resources in ensuring quality information management.

4.4 DEVELOPMENT AND TRAINING

Human resource development and training as defined in Chapter 2 of the study is a learning experience organised by an employer within a specified period of time to bring about the possibility of increased overall performance improvement, productivity and personnel growth in an effort to achieve the goals of the organisation (Mbarek & Gharbi, 2013:50). According to literature the purpose of development and training is to improve the performance of employees, and update their technical skills to keep pace with new developments, in order to perform the job more effectively at standard level (Goldin, 2014:11). The aim of development and training of primary health care practitioners in this study is to facilitate and ensure correct and accurate data capturing which in turn produces quality information for enhanced health care decision making and planning.

The context of the human resource development and training process discussed in Chapter 2 includes conducting a training needs assessment, development of a workplace skills plan, and conducting development and training and evaluation of the human resource development and training programme (Saad *et al.*, 2013: 88). The different types of training, formal or informal workplace learning, or in training institutions support the acquisition of knowledge, skills and development of new competencies to achieve the goals and objectives of the organisation. Hence development and training of human resources for quality information management add value to informed decision making and planning.

The Department of Health is accountable for development and training of human resources. By using information gathered through the semi structured questionnaires administered to primary health care practitioners, namely medical doctors, dentists and professional nurses, quantitative inquiries and qualitative responses were analysed in order to capture the state of development and training of human resources in the North West Department of Health. The responses are central to the effectiveness of public service delivery attained by development and training of human resources to integrate managerial, political and legal approaches in carrying out the mandates of the legislative, executive and judiciary authorities. The objective is to build the capacity of employees in the workplace in order to improve performance, productivity, the

organisation of work and technology. The purpose of development and training is to improve the performance of employees to perform at standard level. Therefore, the employer provides job related learning for the employees to improve their skills, knowledge and attitude, so that they can perform their duties according to set standards.

The role-players involved in human resource development and training are the employer, the chief financial officer and the development training administrator, who align the organisation's development and training strategy with the overall organisational strategy, pay levies and avail finances and personnel for development and training. The benefits of human resource development and training is a link between individual employees and the organisation's mission, training goals, objectives, budget and time frames allocated for training to enhance the attainment of outcomes.

According to Mbarek and Gharbi (2013), human resource development and training refers to the provision of an opportunity to learn once the training needs have been identified to develop new competencies, and assumes new responsibilities in an effort to achieve the goals of the organisation and enhance staff collaboration, team work and increase overall performance and productivity. As mentioned in Chapter 1, Section 195 (1)(c) of the Constitution (1996) determines that public administration must be development-oriented, as well as inclusive of good human resource and career management practices. In addition, the Skills Development Act, (97 of 1998), Chapter 1, (2)(c)(ii) encourages employers to provide employees with the opportunities to acquire new skills; and Chapter 2 (5)(a)(iii) provides an institutional framework to encourage departments such as the Department of Health to implement workplace strategies to develop and improve the skills of employees. The figure below indicates the respondents' responses in that there is continuous development and training of health practitioners, such as themselves, on how to integrate the managerial and legal requirements for quality information management.

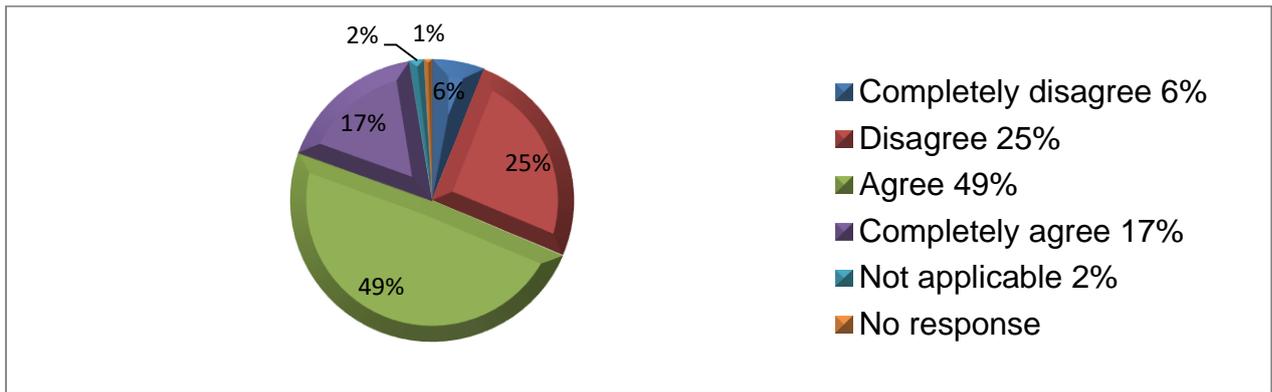


Figure4.11: Continuous development and training of health practitioners, to integrate the managerial and legal requirements for quality information management

Six percent of the respondents completely disagreed and 25% disagreed that there is continuous development and training of health practitioners, such as themselves, on how to integrate the managerial and legal requirements for quality information management. Forty-nine percent of the respondents agreed and 17% completely agreed. This was not applicable to 2% of the respondents and that 1% did not respond. The results seem to contradict some of the qualitative comments made in the previous section, where mention was made that primary health care practitioners are not always trained in ensuring quality information management, thus there is inconsistency in this regard. PNR 19 (2017) maintained that “continuous development and training takes place when the sub-district has a complete skills plan to build capacity of health professionals, however there are always delays in dissemination of information”. Nonetheless, the development of the workplace skills plans and the communication of the plan within the organisation enhance the primary health care practitioners’ responsiveness pertaining to continuous development and training.

According to Swanepoel *et al.* (2005), the workplace skills plan discussed in Chapter 2 of this study, is the strategic human resource development and training activity that contains information regarding the number of trained employees in each occupational group, the organisation’s skills development priorities and quality assurance aiming at the development of employee’s skill and the capacity to achieve the organisation’s goals and objectives. The figure below indicates the respondents’ perceptions that the sub-

district has a complete skills plan inclusive of health information management and technology training to build capacity of health professionals.

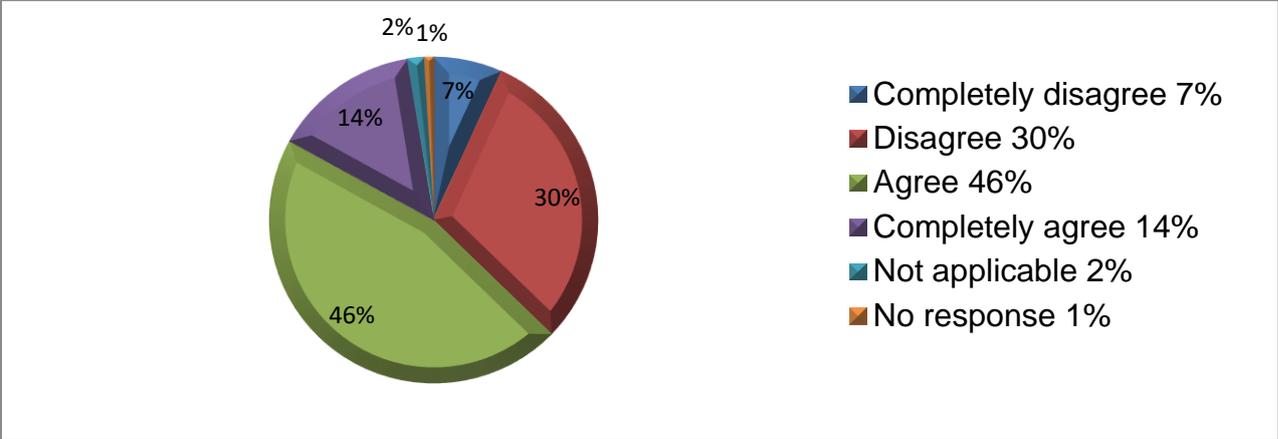


Figure 4.12: The sub-district complete skills plan inclusive of health information management and technology

Seven percent the respondents completely disagreed and 30% disagreed that the sub-district has a complete skills plan inclusive of health information management and technology training to build capacity of health professionals. Forty-six percent of the respondents agreed and 14% completely agreed, while 2%of the respondents said that this was not applicable and 1% did not respond. PNR 18 (2017) stated that “the department as a governing structure should train as many people in the field as possible, to make sure that quality information management is kept in a good state, however proper, timely communication about the training must take place, so that the staff can prepare and suggest how it can be done”. PNR 3 (2017) argued that “consultation before implementation of the workplace skills plan is necessary, because the type of work requires more staff to render patient care, thus development and training is not a priority, whereas professional nurses and administration clerks are not trained on data and quality information management”. Supplementary to the above, PNR 28 (2017) maintains that “they do not have the knowledge and skills regarding quality information management which can assist to plan and manage properly”.

According to the National Department of Health (2013), the health information officer optimises data quality and data use by means of training, facilitation, mentoring, support

and feedback, in order to ensure standardisation of procedures for improvement of data quality. The DHMIS Policy standard operating procedures at facility level are relevant for primary health care practitioners (National Department of Health, 2012). The standard operating procedures are developed to create the national integrated patient based information system, which requires electronic systems for data management such as the Web DHIS, in order to eliminate discrepancies and challenges that emanate from manual data management systems (National Department of Health, 2012). Primary health care practitioners are responsible for the implementation of standard operating procedures. These practitioners are assisted in this role by information officers from health sub-districts, districts, provinces and the National Department of Health, through development and training as well as mentoring and coaching. The figure below indicates the respondents' responses in that health practitioners, such as themselves, are trained on the relevant quality information management standards and operating procedures.

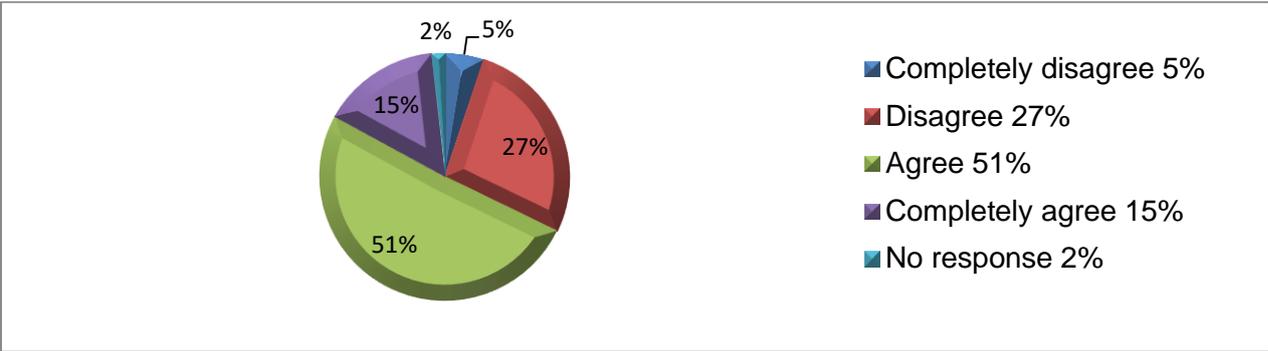


Figure 4.13: Health practitioners are trained on the relevant quality information management standard and operating procedure

Five percent of the respondents completely disagreed and 27% disagreed that health practitioner, such as themselves, are trained on the relevant quality information management standards and operating procedures. Fifty-one percent of the respondents agreed and 15% completely agreed. Two percent of the respondents did not respond. Furthermore, PNR 30 (2017) stated that “the Department of Health should provide more workshops to health practitioners including assistant nurses and admin clerks, so as to reduce the workload of data capturers and ensure continuous capturing of data and enough trained personnel”. PNR 13(2017) said that “sharing the information during the

monthly reviews of health information by trained staff enhances the knowledge of quality information management”. Sharing of information suggests behaviour modelling. According to Nel *et al.* (2005), behaviour modelling is about learning from the experience of others.

Grobler *et al.* (2015) contends that on the job training discussed in Chapter 2 of this study allows workers to learn through coaching, mentoring, job rotation, junior boards, job instruction training, understudy, which includes learner controlled instruction, as well as behaviour modelling by performing the tasks under guidance of an experienced employee who offers advice and suggestions for performing the job efficiently and effectively. Therefore, performance of tasks under guidance of an experienced employee has the potential of enabling the organisation to achieve planned goals. The development of an experienced employee guidance theory is recommended. Experienced employee guidance can be defined as the extent to which employee guidance produced the intended results while the employees are satisfied with the instructions of experienced employee, increase their motivation, and enhance their knowledge and skills. The figure below indicates the respondents’ responses regarding timely formal workplace learning to acquire knowledge and for the development of new competencies to achieve organisational goals and objectives.

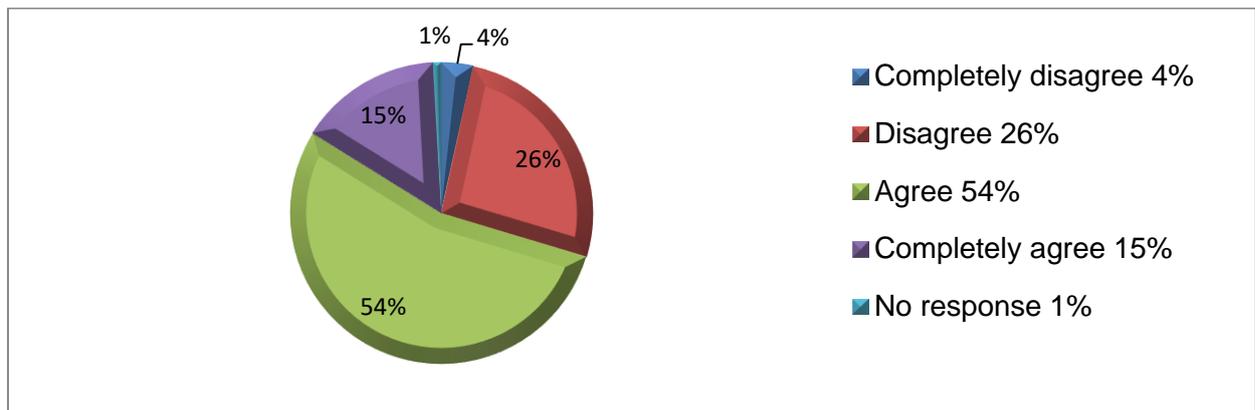


Figure 4.14: Timely formal workplace learning to acquire knowledge and for the development of new competencies

Four percent of the respondents completely disagreed and 26% disagreed that there is timely formal workplace learning to acquire knowledge and for the development of new

competencies to achieve organisational goals and objectives. Fifty-four percent of the respondents agreed and 15% completely agreed. One percent of the respondents did not respond. PNR 52 (2017) stated that “the Department of Health arranged timely formal workplace learning to acquire knowledge on DHIS indicators and introduction of the Web DHIS, however training was not enough to cover all professionals as it was conducted once and there have been updates on data issues”. PNR 4 (2017) also said that “health professionals were also trained on the indicators contributing to decision making and planning with reference to cardio pulmonary resuscitation (CPR) and male medical circumcision (MMC), for the development of new competencies to achieve organisational goals and objectives, however the participants experienced challenges such as shortages of transport to reach the training centre”. Furthermore, PNR 23 (2017) contends that “the use of outside providers who provide information they believe is relevant without prior consultation is a concern” and “there are language barriers” (PNR 38, 2017).

According to the South African Qualifications Authority Act (67 of 2008), Chapter 4(13) (1)(h), discussed in Chapter 2 of this study, the means should be provided to meet the needs for training providers through accreditation of training standards and qualifications, in order to contribute to the full personal development of individuals. In addition, the Skills Development Act (97 of 1998), Chapter 5(20)(1)(a) provides that the training providers are required to comply with the training standard. In response to the frequency of receiving formal training on ensuring quality information management, PNR 6 (2017) stated that “training was attended once or twice a year”. “No training was done on information management” PNR 89 (2017), whereas MPR 5 (2017) said that “we were never trained on quality information management due to shortage of staff resulting in health professionals rendering health care services at the health facility”. The respondent who attended training said “training has not been sufficient because training is required on an ongoing basis seeing that information undergoes changes which one should always be aware of” (DPR 2, 2017). Informal workplace learning is another workplace learning method to acquire knowledge and for the development of new competencies to achieve organisational goals and objectives.

According to Harp (2012), informal workplace learning refers to learning that is acquired through experiences of everyday work as well as intrinsic motivation emanating from a need or opportunity for learning. Misko (2008) furthermore states that informal workplace learning may be intentional, normally unstructured and unplanned, and takes place outside of formal learning structures. It does not lead to accredited formal certification. According to Taber *et al.* (2008), informal workplace learning involves the process of action, reflection and continuous feedback to employees as learners.

The DHMIS standard operating procedures at provincial sphere prescribe that the Head of Department (HOD) is responsible for facilitating the provision of training on data collection tools, data elements and indicator definitions to staff expected to collect data. The provincial health information officer provides leadership, training, mentoring, support, guidance and feedback to districts to optimise data quality and use of data based on identified health information systems, data quality, skills needs and building capacity through formal or informal workplace learning(National Department of Health, 2013:2).Informal workplace learning approaches are work allocation, encouraging flexibility in work routines, allowing employees to experiment, tolerance for failure as well as success, understanding lessons learned, fostering a sense of curiosity and providing informal networking opportunities that encourages avenues of learning for the employees (Harp,2012:44). The figure below indicates the respondents’ responses that there is timely informal workplace learning to acquire knowledge, skills and for the development of new competencies to achieve organisational goals and objectives.

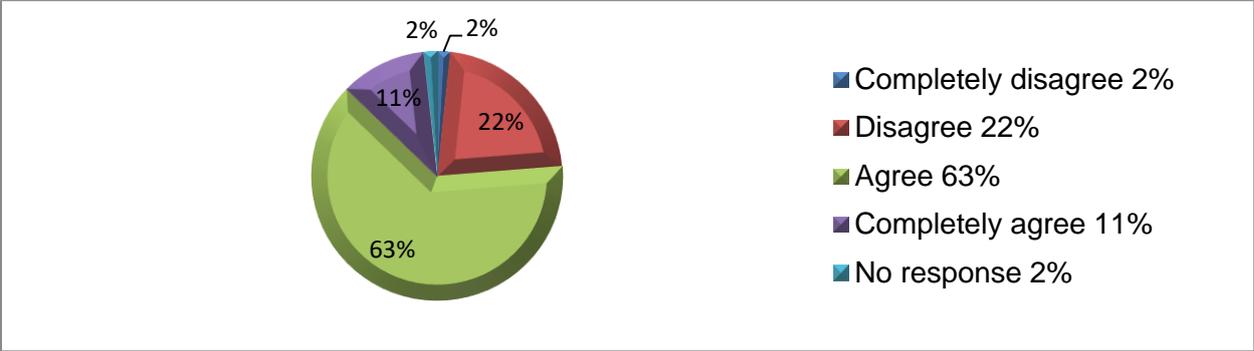


Figure 4.15: Timely informal workplace learning to acquire knowledge, skills and for the development of new competencies

Two percent of the respondents completely disagreed and 22% disagreed that there is timely informal workplace learning to acquire knowledge, skills and for the development of new competencies in order to achieve organisational goals and objectives. Sixty-three percent of the respondents agreed and 11% completely agreed, while 2% of the respondents did not respond.

According to PNR 24 (2017) “the Department of Health has to supply primary health care facilities with enough information resources so that the acquired knowledge on quality information received from data captures is followed and used to access data”. In addition, MPR 4 (2017) claims that “knowledge based training on basic computer, information communication technology (ICT) and employment of personnel can enhance giving feedback, as there can be time to share information and implement what has been discussed”. PNR 52 (2017) suggested “internal in the health facility one-on-one DHIS indicator discussions at unit level for junior staff, continuous onsite DHIS empowerment and regular in-service training conducted in the facilities, provision of enough guidelines and materials, as well as conferences on data management will assist in improving quality of information”.

According to the DHMIS standard operating procedures at provincial sphere, all information management, monitoring and evaluation of staff, data capturers, information officers, supervisors, line and programme managers and health professionals need relevant levels of knowledge and skills in data capturing, use of DHIS validation tools, extraction of DHIS data reports and pivot tables on data quality for data analysis, interpretation and drawing conclusions (National Department of Health, 2013:6). Quality information guides the supervisors, line and programme managers and health professionals in making evidence-based recommendations and management decisions about health programme performance, as well as information feedback to lower levels on data quality and programme performance (National Department of Health, 2013:7). The figure below indicates the respondents’ responses in that the employer, chief financial officer and development training administrator objectively align the organisation’s development and training needs with the overall organisational strategy.

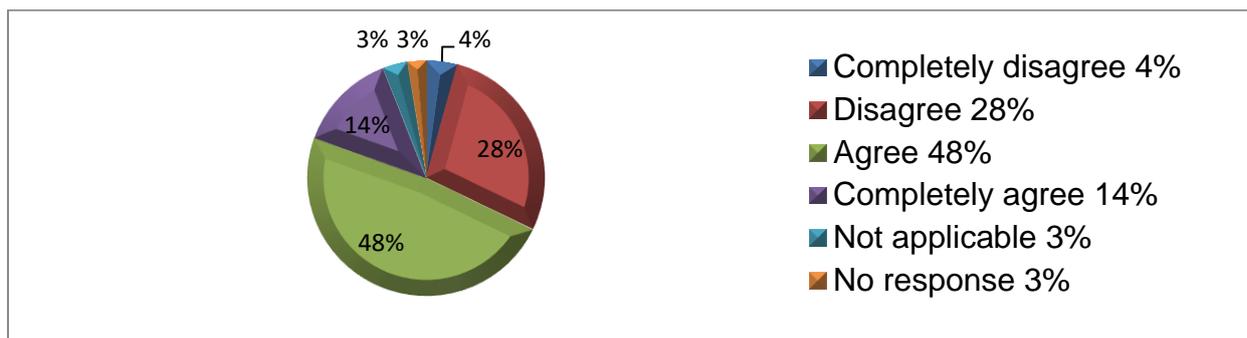


Figure 4.16: Alignment of the organisation’s development and training needs with the overall organisational strategy

Four percent of the respondents completely disagreed and 28% disagreed that the employer, chief financial officer and development training administrator objectively align the organisation’s development and training needs with the overall organisational strategy, 48% of the respondents agreed and 14% completely agreed, and 3% stated that it is not applicable. PNR 16 (2017) however, said that “the employer should emphasise continuous training to all employees from the manager to all sub-ordinates”. According to DPR 4, (2017) “People who lead the health practitioners must be medically orientated so as to understand what is required to render quality service to the communities”. Furthermore, PNR 18 (2017) suggested that “the Department of Health as a governing structure should train people in the field, to make sure quality information management is kept in a good state”. PNR 20 (2017) recommends that “training on quality information management should include other aspects done by health practitioners on each DHIS register and ensure that the facility has enough health practitioners to attend workshops”. The Department of Health is mandated by the National Skills Fund for financing skills development for the successful implementation of objectively aligned organisations’ development and training needs with the overall organisational strategy (South Africa, 1998). The Skills Development Amendment Act (Act 37 of 2008), Chapter 1(1)(d) refers to an occupational qualification as a qualification associated with work-based learning consisting of work experience unit standards (South Africa, 2008).

The Skills Development Act (97 of 1998), Chapter 7(30)(a)(b) discussed in Chapter 2 of this study, integrates strategies within the NQF contemplated in the National Skills Fund

for financing skills development by means of a levy financing scheme(South Africa, 1998). The figure below indicates the respondents’ responses with regard to there being enough money available to ensure that health professionals, such as themselves, receive training on ensuring quality information management.

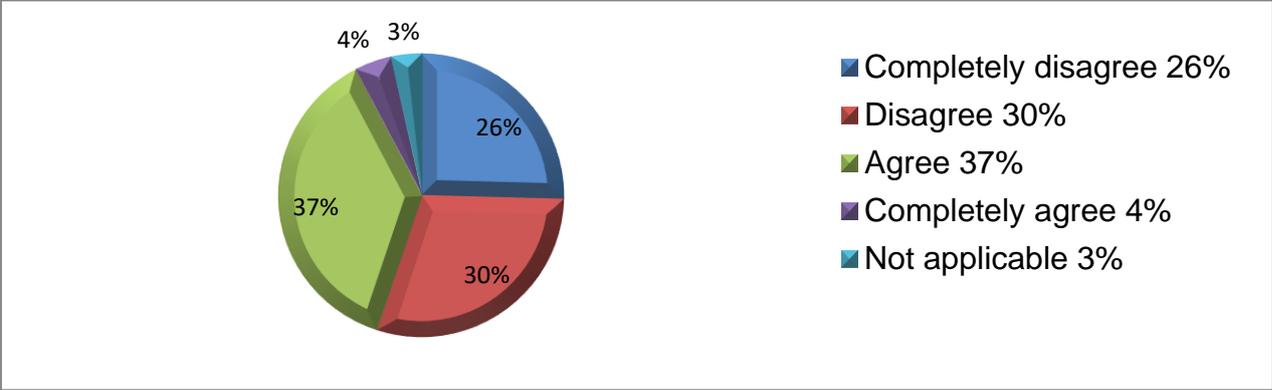


Figure 4.17: There is enough money available to ensure that health practitioners receive training

Twenty-six percent of the respondents completely disagreed and 30% disagreed that there is enough money available to ensure that health practitioners, such as themselves, receive training on ensuring quality information management. Thirty-seven percent of the respondents agreed and 4% completely agreed, but 3%found this to not be applicable.PNR 47 (2017) stated that “the funding for ensuring training of the workers for quality information management will benefit the Department of Health in return, through the production of authentic quality information for planning and decision making”. In addition, PNR23 (2017) said that “the department has to avail enough money to ensure that health practitioners receive training on ensuring quality information management”.

This chapter contextualises the link between the generic functions of public administration discussed in Chapter 2 of this study with development and training of human resources for quality information management. The Government of the Republic of South Africa has further placed emphasis on improving development and training through the National Development Plan (NDP), Vision for 2030 which provides for workplace and the private sector to offer targeted work-based training in line with the

relevant SETA for the production of skills that are required to meet the needs of employers (National Planning Commission, 2011:261).Section 4 Subsection 4.2.4 of the North West Provincial Development Plan 2030, discussed in Chapter 3 of this study, refers to the utilisation and accelerated deployment of Information and Communication Technology (ICT) infrastructure where access is challenging to promote access to information about public services rendered.

According to Oz (2004), leadership requires having a vision and the organisation’s mission to create confidence in others to follow the vision, thus it is necessary to delegate health practitioners to take the responsibility for ensuring efficient and effective quality information management. Leadership in the provincial department of health refers to the Head of Department, who is responsible for the overall ownership of the District Health Information System (DHIS) (National Department of Health, 2013:2). According to the DHMIS Policy, the required resources for provision of quality information management include data collection tools, staff, hardware, software, network connectivity and helpdesks, which are crucial to provide the required comprehensive, timely, reliable and good quality evidence for tracking and improving health service delivery (National Department of Health, 2011:23). The figure below indicates the respondents’ responses with regard to health practitioners, such as themselves having access to the organisation’s mission, training goals, objectives, budget and time frames allocated for training to enhance the attainment of outcomes.

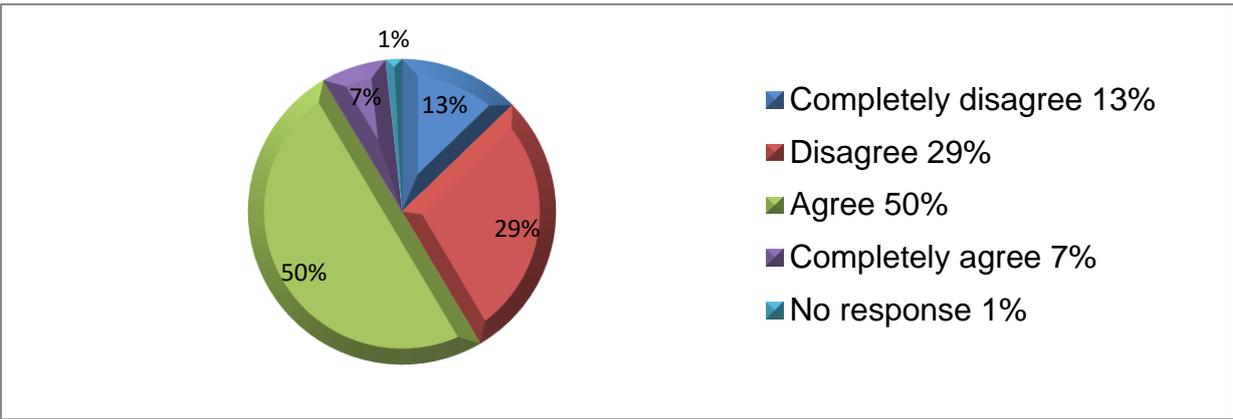


Figure 4.18: Access to the organisation’s mission, training goals, objectives, budget and time frames allocated for training

Thirteen percent of the respondents completely disagreed and 29% disagreed that health practitioners, such as themselves have access to the organisation's mission, training goals, objectives, budget and time frames allocated for training to enhance the attainment of outcomes. Fifty percent of the respondents agreed and 7% completely agreed, while 1% did not respond. DPR 2 (2017) stated that "there should be benchmarks, standards and a description of the procedure in which operations of the organisation are run, with predetermined set goals, objectives, targets and a mission that the organisation aims to achieve". DPR 6 (2017), also maintains that "there should be a number of learning opportunities so that knowledge and skills can be attained within the structure of the organisation, regular training and workshops at the sub-district, in order to equip personnel on ways to achieve quality information management and outline of the mission and objectives is recommended". DPR 4(2017) further recommends that "provision of enough budgets for prompt and timeous procurement and availability of all necessary quality information management resources' computers, internet connectivity, WIFI available per staff member, provision of registers at all times and competent data capturers at each facility including oral health services should be phased in to enhance the attainment of outcomes". PNR 48(2017) however, said "there is lack of network in facilities to access the Web DHIS". Provision of inadequate data collection tools, staff, hardware, software, network connectivity and helpdesks contribute to the inability of the Department of Health to realise their goals and objectives relating to quality information management.

4.4.1 General Observations

Human resource development and training in the public service addresses the performance gap against the standards. Quality information management standard operating procedures from province, district, sub-district up to facility level require that health information management personnel, programme managers, clinic supervisors operational managers and health professionals who are generating data are trained to ensure that data is appropriately handled and used to improve service delivery at local level, prior to submission to the next level of the health system, within the specified time frames (Department of Health, 2013:1). Development and training is based on the legal framework provided in Chapter 1of the Constitution (1996), as well as the Skills

Development Act (97 of 1998), Chapter 1(1)(c)(ii), in that the responsibility of public administrators is to develop and improve the skills of employees. The study found that there is inconsistency regarding continuous development and training of health professionals, on how to integrate the managerial and legal requirements for quality information management. Development and training provides an opportunity to learn once the training needs have been identified, in order to develop new competencies. There are discrepancies regarding the development and training needs assessment to establish the nature of health practitioners' performance gaps in relation to the importance of recording on primary health care tick registers, daily data verification on the summary sheets prior to capturing into the Web DHIS, lack of basic computer skills and knowledge of the DHIS. The training needs ascertain the underlying causes of the difference between the required standard of job performance in relation to accurate recording of data. PNR 41 (2017) maintains that "there is shortage of personnel whereby patient care is prioritised over and above development and training on quality information management". DPR 5(2017) said that "there are inconsistencies with detailed recording of information about the health services rendered". The aim of the training needs analysis is to identify the present performance deficiencies to be included in the workplace skills plan, in order to be addressed by means of development and training. The knowledge and skill required, such as the basic computer skills to perform the job and the steps in performing the task, from the reception headcount register, primary health care tick registers, daily summary registers, up to capturing information into the Web DHIS, as well as the health professional's explanation of how correctly the task is performed, requires development and training to meet the identified needs.

According to Swanepoel *et al.* (2005), the workplace skills plan is the development and training activity aimed at the improvement of employees such as the primary health care practitioners' skills in order to achieve the organisation's goals and objectives. There are inconsistencies in the workplace skills plan regarding the number of trained employees in each occupational group, with reference to medical doctors, dentists and professional nurses about health information management and technology. The workplace skills plan process entails conducting a job analysis of primary health care practitioners, identification of skills requirements for quality information management, defining the Department of Health training priorities for quality information management, in order to

meet the required standards, include identifying a skills programme within primary health care service delivery to address skills training needs and the implementation of the workplace skills plan. There are inconsistencies with funding of the skills programme, as mentioned by PNR 28 (2017), in that “there is not enough money available for health practitioners to receive training on ensuring quality information management”. Thus appropriate alignment of funds for skills programmes on quality information management is crucial, as the Department of Health is contributing a levy of 1% of personnel funding to the National Skills Fund. Inconsistencies with regard to access to information about the organisation’s mission, training goals, objectives, budget and time frames allocated for training, in order to enhance the attainment of outcomes, contribute to ignorance about the value of quality information management for informed decision making and planning within primary health care service delivery. Training on the relevant quality information management standard operating procedure is applicable to health practitioners such as the medical, dental practitioners and professional nurses, as they are responsible for the implementation of the DHMIS facility standard operating procedure. According to the National Department of Health (2013), the Head of Department is responsible for ensuring that information systems form an integrated part of the employee’s performance agreements.

The development and training on information management is conducted to achieve the Department of Health objectives for quality information management, in order to optimise data quality and data use. The learning objectives are that health practitioners are trained on the relevant quality information management standard operating procedure. However, PNR 19 (2017) contends that “there are inconsistencies with distribution of information about training on quality information management, which impedes the health practitioners from arranging transport to the venue, arranging for continuity of health service delivery and feedback within the facility, in addition to involvement of health practitioners regarding the selection of appropriate training methods. This was an oversight”. By virtue of health professionals being clinicians who are rendering primary health care services, training methods such as formal workplace learning interfere with patient care. Therefore, considering other training methods such as informal workplace learning to acquire knowledge on quality information management is necessary. Informal workplace learning encourages flexibility at work

and instils a sense of curiosity to acquire new knowledge and competencies to achieve organisational goals and objectives.

There are contradictions as to whether development and training are evaluated in terms of producing quality information management. Thus, there is an ambiguous change in behaviour towards quality information management at primary health care facilities. The influence of development and training on data management systems, review of primary health care facility information and the use thereof for decision making, is unclear. Therefore, there is no relationship between the acquired knowledge and skill on information management and its application. Evaluation begins at the same time as planning for training. In this study it was found that the training methods were not suitable for health practitioners. There are also inconsistencies with regard to the application of the information management knowledge and skills attained during training. A conclusion from the results of questionnaires for both quality information management and development and training of human resources follows below.

4.5 CONCLUSION

Inconsistencies with recording, verification and capturing of data from the District Health Information System registers to the Web based District Health Information System(DHIS) contribute to unaccountability for all patients seen at primary health care facilities in the North West Department of Health. There are irregularities for recording patients' accurate data of the service rendered, immediately after consultation, as indicated on the primary health care daily tick registers used for consistent recording of information from the patient folder. There are irregularities of ensuring the authenticity of data by verification of primary health care daily tick registers by the unit manager. There are also inconsistencies with data verification by the unit manager from the primary health care daily tick registers to the tally summary where it is aggregated into the Web District Health Information System.

Furthermore, there are discrepancies with weekly spot checks on patient clinical record reviews by the unit manager, in order to optimise DHIS data quality and use. There are inconsistencies in relation to the health practitioners' attendance of the sub-district monthly health information performance review meetings, in order to ensure that

remedial interventions are implemented to improve data quality and service delivery where data shows inadequate performance. A deduction from these factors is the importance of consistency of data collection, daily data capturing and verification of data for completeness, correctness and accuracy, in order to correct discrepancies on time. Availability of resources necessary for quality information management ranges from available human resources for development and training scheduled for quality information management, to reliable data collection tools with reference to DHIS registers, computers and network connection for Web DHIS. The lack thereof thus means that capturing of data is not done daily or weekly, as information communication technology and budgeting for these resources is inadequate.

The inconsistencies regarding continuous development and training of health practitioners on how to integrate the managerial and legal requirements for quality information management is as a result of delays in dissemination of information management courses included in the sub-district skills plan to build capacity of health practitioners. For that reason, consultation is vital before implementation of the workplace skills plan, so that the practitioners can plan for health care service delivery and attendance of development and training for quality information management. As stated in this chapter, the Director-General of the Department of Health, the provincial heads of departments and district health managers are responsible for developing human resource development plans for health information systems to ensure that personnel are developing required knowledge and skills. Limited staff at primary health care facilities affects the release of health practitioners to attend training, and feedback from those who attended training. Adversely informed decisions and planning for provision of additional personnel in a primary health care facility are informed, amongst others, by workloads registered by a health facility, as well as quality data that emanates from prompt, accurate recording of clinical work on the patient tick register. Therefore, the value of quality information management for informed decision making cannot be underestimated.

The Department of Health is mandated by the National Skills Fund for financing skills development by means of a levy financing scheme for the successful implementation of objectively aligned organisation's development and training needs with the overall

organisational strategy (South Africa, 2008). Allocation of adequate budgets to actualise the organisation's development and training goals, objectives and sufficient quality information management resources was found to be pivotal to enhance the attainment of outcomes. The North West Provincial Development Plan 2030, discussed in Chapter 3 of this study, refers to the utilisation and accelerated deployment of Information and Communication Technology (ICT) infrastructure where access is challenging, in order to promote access to information about public services rendered by departments such the Department of Health. This chapter addressed the research objective of determining the current challenges in terms of developing and training primary health care practitioners for quality information management in the North West Department of Health. The following chapter makes recommendations pertaining to human resource development and training of primary health care practitioners for quality information management.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter provides recommendations relating to human resource development and training of primary health care practitioners for quality information management, in conclusion of the study. The recommendations pertain to the statutory and regulatory framework for health services in South Africa; the theoretical and statutory framework for human resource development and training; the theoretical and statutory framework for quality information management; the current challenges in terms of developing and training primary health care practitioners for quality information management in the North West Department of Health; human resource development and training of primary health care practitioners for quality information management, and finally recommendations for future research.

5.2 CONCLUSIONS

The study described the context of information management and its applicability to the Department of Health with reference to the statutory and regulatory framework for health services in South Africa. The study found that in terms of Chapter 1 Section 2 of the Constitution of the Republic of South Africa, 1996, the Department of Health is obliged to fulfil what is expected from it with reference to health service delivery and the accountability thereof (South Africa, 1996). Thereafter the National Health Act, 61 of 2003, prescribes a framework for a structured uniform health system within the Republic of South Africa, recognising the need to improve the quality of life for all South Africans and taking into account the obligations imposed by Section 27(2) of the Constitution, 1996, regarding the right of access to health care services. Chapter 4, Section 25(2)(b) of the National Health Act, 61 of 2003, prescribes that the head of a provincial department must manage the provincial Health Information Management System (South Africa, 2003).

A further emphasis by the Public Finance Management Act, 1 of 1999, Section 40(1)(d) is that the accounting officer for a department must submit, within five months of the end

of a financial year to the relevant treasury, the non-financial and financial reports based on information management (South Africa, 1999). In addition, the National Treasury Regulations, 2012, Section 4.7.3(a)(b) prescribes that “information management, including primary source documents for verification during audit processes, remains the primary responsibility of accounting officers on behalf of the department” (South Africa, 2012). Furthermore, the National Treasury Regulations, 2012, Sections 4.2.1(d)(f) and (g), prescribe that the accounting officer establishes and maintains the internal control environment of delegated responsibilities through the provision of standard operating procedures, training of employees and establishment of effective and efficient internal audit functions (South Africa, 2012). The Government of the Republic of South Africa has further placed emphasis on health care through the National Development Plan (NDP), Vision for 2030, whereby Chapter 10 of the plan commits the Minister of Health to promote health by working together with other sectors and ministries to address the social determinants of health, to promote health-related issues and to attend to medical issues to solve complex problems in relation to health service delivery (National Planning Commission, 2011).

The problem statement of the study is described as that the Auditor General of South Africa (2016) found that the North West Department of Health was non-compliant in terms of factors such as input of data from where it is generated, and processing of data from the primary source documents to the District Health Information System (DHIS). Output of data showed errors and inaccuracies were identified. In order to identify the probable causes of the findings by the Auditor General, an orientation to the provisional chapter layout of the study, with reference to a description of the theoretical framework for human resource development and training, and quality information management, was described. Throughout the chapters, the current challenges regarding quality information management and human resource development and training of primary health care practitioners for quality information management in the North West Department of Health are determined.

Chapter 2 of the study described the literature concerning human resource development and training, as well as the statutory framework enabling it. According to Swanepoel *et al.* (2005), a conceptual and theoretical understanding of development and training of

human resources in the public service is that human resource development is a learning experience organised by an employer within a specified period of time to bring about the possibility of performance improvement and personnel growth. Therefore, Mbarek and Gharbi (2013) contend that human resource development is the provision of an opportunity to learn, develop new competencies, and assume new responsibilities in an effort to achieve the goals of the organisation and enhance staff collaboration, team work and increase overall performance and productivity.

The study described the statutory environment supporting or enabling development and training of human resources. Chapter 1, Section 195(1)(c) of the Constitution (1996) determines that public administration must be development-oriented as well as inclusive of good human resource and career management practices (South Africa, 1996). As such, the study argues that public organisations are constitutionally obliged to promote the development and training of their employees, in this case the health practitioners, for enhanced service delivery, which for the purpose of the study focuses on quality information management.

According to the South African Qualifications Authority Act, 67 of 2008, Chapter 2 Section 4, the National Qualifications Framework (NQF) provides for the development and implementation of an integrated approach to development and training in the country (South Africa, 2008). Therefore, the South African Qualifications Authority Act, 67 of 2008, Section 3 provides for the NQF to register and accredit training standards and qualifications. In terms of Section 9 of the South African Qualifications Authority Act, 67 of 2008, the Education and Training Quality Assurance (ETQA) Bodies accredit essential training providers for specific standards or qualifications registered on the NQF (South Africa, 2008). The implication of the South African Qualifications Authority Act, 67 of 2008 for the study, is that the Department of Health must consider and meet the standards set by applicable bodies when developing training initiatives for its human resources, including primary health care practitioners responsible for quality information management. In addition, the Skills Development Act, 97 of 1998, provides an institutional framework to devise and implement national, sector and workplace strategies to develop and improve the skills of employees through integration of

strategies within the NQF contemplated in the National Skills Fund for financing skills development by means of a levy financing scheme.

The Skills Development Act, 97 of 1998, Chapters 3 and 9(2)(1)(a) also emphasise that the minister of a relevant department, for the purpose of this study the Minister of Health, must establish sector education and training authorities (SETA) to determine the education and training needs of employers and employees that render similar services and develop an occupation based skills programme (South Africa, 1998). The study argues that by identifying the information management needs of health practitioners, the Department of Health will be in a position to determine appropriate development and training initiatives which may be developed with the assistance of the appropriate SETA and funded through the skills levies fund. The Labour Relations Act, 66 of 1995, Chapter 1, Section 1(a) also gives effect to and regulates the fundamental rights conferred by Section 27 of the Constitution, 1996, which includes the participation of organised labour at strategic, sector and organisation levels for implementation of the Skills Development Act, 97 of 1998, (South Africa, 1995). The National Planning Commission (2011) Chapter 9 of the National Development Plan (2030) also emphasises that the universities are fundamental in developing the nation for the production of skills that are required to meet the needs of employers. Furthermore, the North West Planning Commission, 2013, Chapter 7 of the North West Provincial Development Plan (2030), also refers to diversifying higher education systems through Further Education and Training Colleges (FETs), public adult learning centres, SETAs and professional colleges, in order to produce skilled and semi-skilled workers focusing on public services.

Chapter 3 of the study described the theoretical and statutory framework for quality information management. The chapter provided a conceptual framework as it relates to quality information management emphasising compliance to standards with reference to accuracy, completeness, economy, reliability, relevance, simplicity, timeliness, verifiability, accessibility and security for planning and decision making. The study identified that the knowledge requirements for quality information management in relation to the activities of the organisation are an understanding of the systems concepts with reference to the District Health Information System (DHIS) and required

resources with regard to people, computers and information technology infrastructure as well as the theoretical framework of concepts such as quality, data and information. The chapter furthermore described the requirements of the legislative framework in supporting quality information management.

Chapter 5 of the Public Administration Management Act, 11 of 2014, Section 14(a), emphasises the use of Information and Communication Technologies in public administration in a manner which ensures the interoperability of information systems to enhance internal efficiency or service delivery and security of information systems (South Africa, 2014). From the National Department of Health's (2011) point of view, the District Health Management Information Systems Policy of 2011 argues that all provinces, districts, sub-districts and health facilities ought to harmonise information across the country and formalise the resources required for effective implementation of a well-functioning DHMIS Policy. Security of information is provided in the Protection of Information Act, 84 of 1982, whereby Section 4(b)(111) prohibits the disclosure of certain information which has been entrusted in confidence to a member of the public by a person holding office in public administration. Section 4(b)(aa) refers to disclosure of information to any person other than a person authorised to disclose it or to whom it may be lawfully disclosed for the interest of the public (South Africa, 1982). In addition, the Protection of Personal Information Act, 4 of 2013, Section 5(16)(1) refers to quality of information whereby a responsible party must take reasonably practicable steps to ensure that personal information is complete, accurate and updated where necessary (South Africa, 2013). Different types of information collected within the public service include employee information processed through the Personnel and Salary System (PERSAL), finance information processed through the basic accounting system (BASS) and for the Department of Health, health service delivery information which is processed through the DHIS.

According to the National Planning Commission (2011), the National Development Plan 2030 advocates for access to information technology infrastructure to meet the needs of the public. The Department of Health data is captured online on the DHIS using an information technology infrastructure through 3G where the information technology infrastructure is not accessible. Moreover, the North West Planning Commission (2013),

Section 4 Subsections 4.2.4 of the North West Provincial Development Plan 2030 also refers to the utilisation and accelerated deployment of Information and Communication Technology (ICT) infrastructure where access is challenging. The general deduction from the above legislative framework is that this study, which focuses on quality information management, is aligned to the North West Provincial Development Plan 2030 which supports access to quality information about public services rendered such as health care services.

Chapter 4 of the study determined the current challenges in terms of developing and training primary health care practitioners for quality information management in the North West Department of Health, drawn from both literature and empirically collected data. The mixed method research approach was selected for this particular study, in order to collect data from a sample. The study found that inconsistencies with recording, verification and capturing of data from DHIS registers to the Web based DHIS contribute to the North West Department of Health not accounting for all patients seen at primary health care facilities. Inconsistencies range from irregularities for recording immediately after consultation with patients, accurate data of the service rendered as indicated on the primary health care daily tick registers, daily verification of data captured on the primary health care daily tick registers by the unit manager and data verification from the primary health care daily tick registers to the tally summary where it is aggregated into the Web based DHIS. Additional discrepancies occur with weekly spot checks on patient clinical record reviews by the unit manager to optimise DHIS data quality and use, as well as inconsistencies in relation to the health practitioners' attendance of the sub-district monthly health information performance review meetings to ensure that remedial interventions are implemented to improve data quality and service delivery where data shows inadequate performance. A deduction from these factors is the importance of consistency of data collection, daily data capturing and verification of data for completeness, correctness and accuracy, as well as to correct discrepancies on time.

The specific challenges experienced by respondents in producing or ensuring quality health information are lack of patients' tick registers, computers, no internet connection in some facilities designed for Web DHIS, thus capturing of data is not done daily or

weekly. Limited staff at primary health care facilities affects the release of health professionals to attend training, as well as feedback from those who attended training. Adversely taken decisions and planning for provision of additional personnel in a primary health care facility is informed, amongst others, by workloads registered by a health facility, as well as quality data that emanates from prompt accurate recording of clinical work on the patient tick register. The Director-General of the Department of Health, the provincial heads of departments and district health managers are responsible for developing human resource development plans for health information systems, in order to guarantee that personnel, acquire the required knowledge and skills. Based on the findings of this study, recommendations are made in relation to themes pertaining to information management, as well as development and training.

5.3 RECOMMENDATIONS

The study concludes by making recommendations regarding human resource development and training of primary health care practitioners for quality information management. The study recommends that the North West Department of Health focuses on consistent availability of the following information management resources necessary for data collection:

- Primary health care daily tick registers per consulting room for capturing of data immediately after rendering of health service;
- tally summary per data capture where data it is aggregated;
- two computers per facility for the two health information systems, the District Health Information System and Tier.net, for daily capturing of data into the Web DHIS;
- engagement with the provincial Information and Communication Technology (ICT)Unit for the installation of anti-virus software in the health information system computers;
- health information system computers should be monitored for non-installation of any other software not intended for DHIS;

- engagement with the provincial Information and Communication Technology (ICT)Unit for installation of network infrastructure in facilities with access to such services, or WIFI routers for daily capturing of data into the Web DHIS;
- health information help desks should be instituted to provide support to primary health care facilities experiencing challenges;
- the personnel structure of existing data capturers posts should be reviewed, in order to identify the needs and motivate for creation of funded posts to enhance daily capturing of data at primary health care facilities; and
- engagement with the National Department of Health for the implementation of work load indicators for staffing needs (WISN),in order to address the required staff compliment at primary health care facilities.

Furthermore, the study recommends that the North West Department of Health focuses on development and training of human resources in order to ensure that primary health care practitioners acquire the knowledge and skills necessary for quality information management. The following are recommended responsibilities for development and training of human resources:

- engagement with primary health care practitioners to identify their training needs. The findings of this study are that training needs range from basic computer skills, Web District Health Information System (DHIS) and Tier.net training, the use and value of DHIS registers from thereception headcount register, the primary health care daily tick to the primary health care tally summary, as well as the role of the unit manager regarding verification of data for completeness, correctness and accuracy. Discrepancies also need to be corrected on time;
- development of the workplace skills plans to address the identified needs for quality information management;
- prioritisation of funding of the workplace skills plan for effective implementation of the District Health Management Information System (DHMIS) Policy;

- exploration of the different types of training for primary health care practitioners for the successful implementation of the training schedule;
- ensuring timely communication of the approved training schedule to primary health care practitioners; and
- mentoring of trained primary health care practitioners by information officers.

5.4 CONCLUSION AND FUTURE RESEARCH

The structural arrangements discussed in Chapter 4 of this study are that the administration clerk at reception registers patient files on the reception headcount register. Health practitioners are responsible for recording data on the clinical records, as well as on the primary health care tick registers. Data capturers summarise data from the primary health care tick registers into the weekly tally summary registers. The unit manager is assigned the authority to verify correctness of data captured in all the registers prior to capturing of data into the Web DHIS and Tier.net for the HIV/AIDS and TB Programmes. Thereafter data is processed into information. The development and training of the abovementioned officials engaged with health information management regarding their roles and responsibilities, expectations and the influence of quality information management on primary health care service delivery, is recommended.

The greatest emphasis is placed on the leadership of the unit manager who ensures control by co-ordinating data related activities for a common understanding of quality information management work processes against the DHMIS standard operating procedures at facility level. Knowing the value of quality information management promotes an understanding of the reasons to complete, immediately after consultation with patients, accurate data of the service rendered as indicated on the patient register. An understanding of quality information management contributes to consistent performance against the standards with regard to verification of data before it is signed off for its authenticity. Notice should also be taken that the total headcount at primary health care facilities, hours of service and the type of health services rendered are some of the inputs in determining the staffing needs for a primary health care facility.

According to the North West Planning Commission (2013), the North West Provincial Development Plan 2030 prioritised the accelerated deployment of Information and Communication Technology (ICT) infrastructure where access is challenging. There is provision for departments such as the Department of Health to prioritise accelerated deployment of Information and Communication Technology (ICT) with the relevant department. The implementation of ICT will contribute to successful data capturing into the Web DHIS. However, the availability of material resources requires knowledge and skill of how to operate the equipment and software. The study acknowledges that some of the participants require training on basic computer skills prior to DHIS training.

In order to address the performance gap against the standards, quality information management standard operating procedure from province, district, sub-district up to facility level requires training of health information management personnel, programme managers, clinic supervisors, operational managers and health practitioners. The annual review of the workplace skills plan is necessary to incorporate the number of trained employees in each occupational group with reference to medical doctors, dentists and professional nurses about health information management and technology. Considering the clinical services rendered by primary health care practitioners, their involvement regarding the selection of appropriate training methods such as the formal or informal workplace learning is essential. The evaluation of development and training conducted on quality information management is required to plan for appropriate mentoring and coaching initiatives on the application of acquired knowledge and skill on information management. The importance of compliance to quality of data as a prerequisite for quality information is for the North West Department of Health to make informed decisions when planning. Further research is needed to explore the development of a framework which captures the aspects of data quality that are important for attaining quality information management.

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Annexure A: Research questionnaire

Informed consent for participation in an academic research study:

School of Government Studies

Title of study

Human resource development and training of Primary Health Care practitioners for quality information management:

the case of the North West Province Department of Health

Research conducted by:

Magogodi Junior Seema

Student number 23717629

Cell: 0636952892

Dear Respondent

You are invited to take part in an academic study, as part of the requirements for a Master's degree in Public Administration in the School of Government Studies at North West University, Potchefstroom Campus.

The primary objective of this study is to determine the human resource development and training needs of primary health care practitioners for quality information management. In addition, the study aims to achieve the following sub-objectives:

to determine the current challenges in terms of developing and training primary health care practitioners for quality information management in the North West Department of Health; and

to make recommendations pertaining to human resource development and training of primary health care practitioners for quality information management.

Please note that your participation will be anonymous and you cannot be identified in person based on the answers that you give.

Your participation in this study is exceptionally important and will provide input regarding the human resource development and training of primary health care practitioners for quality information management. The results of the study will be used for scientific purposes and may be published in an academic journal. A summary of the findings will be made accessible upon request.

Please contact my supervisor, Professor Gerda van Dijk at 018 299 1627 or e-mail: Gerda.VanDijk@nwu.ac.za for any clarification or inquiry about the study.

Please answer all questions in the attached questionnaire as sincerely as possible. You may complete the survey electronically, or print it out, scan and email the completed questionnaire to mseema@nwpg.gov.za.

Please respond by 28 September 2017.

Consent regarding participation in a research project.

Please mark the appropriate response with an **X**.

<p>I have read the information above about the aims and objectives of the proposed study thus I am adequately informed by the researcher about the benefits of the study. I am aware that the results of the study will be anonymously analysed in a research report. I understand that participation in this study is voluntary and that I may, at any time and without supplying reasons withdraw my consent and participation in the study. I am fully aware that the results of this study will be used for scientific purposes and may be published in an academic journal. I therefore declare myself prepared to participate in the study.</p>	Yes	No
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Part A: Demographic information

Instructions:

Indicate your answer with an **X** in the appropriate box.

Q1. Which statutory body are you registered with?

Nr	Qualification	
A1	Medical doctor registered with the Health Professionals Council of South Africa (HPCSA)	1
A2	Dentist registered with the Health Professionals Council of South Africa (HPCSA)	2
A3	Professional nurse registered with the South African Nursing Council (SANC)	3

Part B: Information management

Please indicate with an **X** in the appropriate column **1** to **5**

Nr	Statements	Completely disagree	Disagree	Agree	Completely agree	Not applicable
		1	2	3	4	5

Nr	Statements	Completely disagree	Disagree	Agree	Completely agree	Not applicable
		1	2	3	4	5
B1	Data captured in the daily reception headcount register is consistent with the number of patients registered for that day.					
B2	The unit manager verifies the completeness of daily reception headcount register prior to signing off on its authenticity.					
B3	The clinician completes, immediately after consultation with patients accurate data of the service rendered as indicated on the patient register.					
B4	The relevant data recorded on the daily Primary Health Care (PHC) comprehensive tick register is verified by the unit manager.					
B5	The data is captured weekly from the tally summary into the District Health Information System (DHIS)					
B6	The unit manager verifies the objectivity of the data recorded on the patient's register from randomly selected patient files.					
B7	Health practitioners, such as yourself, access health information from the District Health Information System for planning and decision making.					
B8	As a health practitioner, you attend sub-district monthly health information					

Nr	Statements	Completely disagree	Disagree	Agree	Completely agree	Not applicable
		1	2	3	4	5
	performance review meetings.					

Part C: Development and Training

Indicate your answer with an **X** in the appropriate column **1** to **5**

Nr	Statements	Completely disagree	Disagree	Agree	Completely agree	Not applicable
		1	2	3	4	5
C1	There is continuous development and training of health practitioners, such as yourself, on how to integrate the managerial and legal requirements for quality information management.					
C2	The sub-district has a complete skills plan inclusive of health information management and technology training to build capacity of health practitioners, such as yourself.					
C3	Health practitioners, such as yourself, are trained on the relevant quality information management standard and operating procedure.					

Nr	Statements	Completely disagree	Disagree	Agree	Completely agree	Not applicable
		1	2	3	4	5
C4	There is timely formal workplace learning to acquire knowledge and for the development of new competencies to achieve organisational goals and objectives.					
C5	There is timely informal workplace learning to acquire knowledge, skills and for the development of new competencies to achieve organisational goals and objectives.					
C6	The employer, chief financial officer and development training administrator objectively align the organisation's development and training needs with the overall organisational strategy.					
C7	There is enough money available to ensure that health practitioners, such as yourself, receive training on ensuring quality information management					
C8	Health practitioners, such as yourself have access to the organisation's mission, training goals, objectives, budget and time frames allocated for training to enhance the attainment of outcomes.					

Part D: Open ended questions

Nr	Open ended question	Please describe
D1	What, in your opinion, is quality information management?	
D2	What, in your opinion, ensures quality information management?	
D3	How often have you received training on ensuring quality information management? Has the training been sufficient? If no, please provide reasons for this.	

Nr	Open ended question	Please describe
D4	What specific challenges do you experience in producing or ensuring quality health information?	
D5	What would you suggest to the Department to enhance the quality of information management?	

Thank you for your participation.