FACTORS INFLUENCING THE QUALITY OF DATA FOR TUBERCULOSIS CONTROL PROGRAMME IN OSHAKATI DISTRICT, NAMIBIA

by

LINDA VUGUTSA KAGASI

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SUPERVISOR: PROF LI ZUNGU

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DECLARATION

I, **Linda Vugutsa Kagasi** declare that the dissertation entitled "**Factors influencing the quality of data for tuberculosis control programme in Oshakati District, Namibia**", is my own work and that all sources used or cited have been indicated and acknowledged by means of complete referencing. No part of this project may be reproduced without prior permission of the author and/or the University of South Africa.

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_____   _____
SIGNATURE   **DATE**
(LINDA KAGASI)

DECLARATION BY SUPERVISOR

This research project has been submitted for examination with my approval as the University Supervisor.

06 December 2010

_____   _____

SIGNATURE   **DATE**

(PROF LINDIWE ZUNGU)

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STUDENT NUMBER :   37324969
STUDENT   :   LINDA VUGUTSA KAGASI
DEGREE   :   MASTER OF PUBLIC HEALTH
DEPARTMENT   :   HEALTH STUDIES, UNIVERSITY OF SOUTH AFRICA
SUPERVISOR   :   PROF LINDIWE ZUNGU

ABSTRACT

This study investigated factors influencing the quality of data for the Tuberculosis (TB) control programme in Oshakati District in Namibia. A quantitative, cross-sectional descriptive survey was conducted using 50 nurses who were sampled from five departments in Oshakati State Hospital. Data was collected by means of a self-administered questionnaire.

The results indicated that the majority (90%) of the respondents agreed that TB training improved correct recording and reporting. Sixty percent of the respondents agreed that TB trainings influenced the rate of incomplete records in the unit, while 26% of the respondents disagreed with this statement. This indicates that TB trainings influence the quality of data reported in the TB programme as it influences correct recording and completeness of data at operational level.

Participants' knowledge on TB control guidelines, in particular the use of TB records to, used to capture the core TB indicators influenced the quality of data in the programme. The attitudes and practises of respondents affected implementation of TB guidelines hence, influencing the quality of data in the programme. The findings related to the influence of the quality of data in the TB programme and its effect to decision-making demonstrated a positive relationship (p=0.0023) between the attitudes of study participant on the use of data collected for decision-making.

Knowledge, attitudes and practice are the main factors influencing the quality of data in the TB control programme in Oshakati District.

Keywords

Factors; data quality; tuberculosis; control programme; Namibia.

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Dedication

This dissertation is dedicated to the Almighty God, for His loving kindness, wisdom and grace that always abounds all the days of my life and during this research period. To my parents, John and Edith Kagasi, for their dedication to my studies, mentorship, inspiration and being role models in my life. My sister, Juliana, for her silent love and support and Tim Chindia, for his support during the period of conducting this research project.

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List of abbreviations

AIDS	Acquired Immune Deficiency Syndrome
CNR	Case Notification Rate
CQI	Continuous Quality Improvement
DHIS	District Health Information System
DOTS	Direct Observed Therapy Short Course
DTC	District Tuberculosis Coordinator
DTO	District Tuberculosis Officer
ETR	Electronic Tuberculosis Register
HCW	Health Care Workers
HIV	Human Immuno-deficiency Virus
HMIS	Health Management Information System
KABP	Knowledge Attitude Beliefs Practices
MDR-TB	Multiple Drug Resistance Tuberculosis
MoHSS	Ministry of Health and Social Services
MTP 1	Medium Term Plan One
NTCP	National Tuberculosis Control Programme
NTP	National Tuberculosis Programme
PALSA	Practical Approach to Lung Health in South Africa
PDSA	Plan Do Study Act
PHC	Primary Health Care
RMT	Regional Management Team
SA	South Africa
SHPA	Special Health Programme Administrator
SPSS	Statistical Packages for Social Sciences
TB	Tuberculosis
TB R&R	Tuberculosis Recording and Reporting
TBCAP	Tuberculosis Coalition Assistance Programme
TBCTA	Tuberculosis Coalition Technical Assistance
TQM	Total Quality Management
UK	United Kingdom
UN	United Nations
UNISA	University of South Africa
USA	United States of America
WHO	World Health Organization

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CHAPTER 1

Orientation to the study

1.1   INTRODUCTION

Tuberculosis (TB) remains a major cause of morbidity and mortality in many countries and is a significant health problem worldwide (World Health Organization [WHO] 2008[a]:3). In 2005 the WHO reported that the global incidences of TB were estimated to be 136 cases per 100 000 members of the population per year. The incidence of TB ranged from 39 per 100 000 per year in the WHO regions of the Americas to 343 per 100 000 per year in the African region (WHO 2008[a]:3). The burden of TB in Namibia was reported to be 765 cases per 100 000 of the population in 2006/2007 (Ministry of Health and Social Services [MoHSS] 2008[a]:6).

This is reported to be the second highest Case Notification Rate (CNR) in the world after Swaziland (MoHSS 2008[a]:6). The WHO targets for tuberculosis control by 2015 include 100% direct observed therapy short-course (DOTS) coverage, 70% case detection and 85% treatment success rates (WHO 2006[a]:6).

Effective TB control relies heavily upon the general health system of the country, particularly on the well-functioning primary health care (PHC) services. However, in most countries, TB programmes are an important part of, and are normally well integrated into the general health systems, especially at the points of services. They contribute substantially to strengthening the health systems, which include the direct observed therapy (DOT) strategies. Furthermore in trying to control the incidence of TB, the WHO developed the "*Stop TB Strategy*" which consists of the following components, namely:

- Pursuing high-quality DOT expansion and enhancement.
- Addressing TB/HIV, Multiple Drug Resistance Tuberculosis (MDR-TB) and other challenges.
- Contributing to health system strengthening.
- Engaging all health care providers.

- Empowering people and communities with TB awareness and control information.
- Enabling and promoting operational research related to TB control (WHO 2006[a]:8).

Nadol, Stinson, Coggin, Naicker, Wells, Miller and Nelson (2008:58) support the sentiments that the success of the *"Stop TB Strategy"* depends on well established recording and reporting systems for TB surveillance, which according to the authors should effectively report on the progress of the DOT programmes.

The authors further pointed out that a well-functioning TB surveillance system produces accurate standardised TB surveillance and enables case detection and outcomes assessment of TB patients. This provides data that is useful in monitoring and evaluation of TB control programmes, programme implementation and serving as a supervisory tool for the National TB Programme (NTP) staff (Nadol et al 2008:58).

Accurate, timely and accessible health care data plays a pivotal role in the planning, development and maintenance of health services (WHO 2003[a]:1). It is also known that different administrative levels in the health system play different roles and hence exhibit different data needs (WHO 2004:9). For effective communication, data must be valid and conform to an expected range of values and it the same case, it becomes more useful if data is accurate (WHO 2003[a]:10). This study, therefore, seeks to investigate factors that influence data quality processed in the TB control programme, with a special focus in Oshakati District, Namibia.

1.2   BACKGROUND TO THIS RESEARCH

According to the *"Stop TB Policy"* by the WHO, poor quality vital statistics and demographic information, lack of data on patterns of health care utilisation, weaknesses in the surveillance system and poor disease notification systems were identified as major factors influencing the data quality that affect the control and management of TB programmes (WHO 2008[b]:1). This is as a result of the data quality collected in the health system as well as data collected specifically in the TB programmes (WHO 2008[b]:2).

1.2.1 Data quality

Fundamental principles of quality assurance with regards to data quality include five dimensions, namely; integrity, methodology, soundness, accuracy and reliability of data collected (WHO 2008[c]:4).

In health care settings the quality of data is viewed as a continuous process, as opposed to a one time activity. This is exhibited in the literature reviewed which concurs with the definition provided in Tomey (2000:382); which indicated that continuous quality improvement is a preventive, problem-solving process which results in effective and efficient service. According to Herbst (2002:379), the term data quality suggests data correctness. Green and Bowie (2005:246) emphasise that the following characteristics are important in ensuring data quality; namely, accessibility, accuracy, comprehend-siveness, consistency, definition, granularity, precision, relevance and data timeliness.

One of the attributes of reliable and valid data is its completeness. According to a study in the United Kingdom (UK), complete data allows governments to be reassured concerning full disclosure of outcomes by the centre of origins, thus assisting the process of validation, monitoring and feedback geared towards improving data quality (Fine, Bruce, Shan, Maria & Mairi 2003:25).

In Namibia, the MoHSS TB guideline clearly describes the flow of data from the facility level up to the district level, while various reporting forms are clearly illustrated. However, the guidelines do not provide details regarding data verification processes, timeliness as regards the information reaching the various management levels, the frequency of feedback to evaluate the achievements of the programme and gaps identified during supervisory visits (MoHSS 2006:50).

Well (2000:597) voices the concern that as a result of donor dominance, low income nations have experienced minimal ownership of their systems. The author further argues that this customarily leads to limiting the motivation and flexibility of the response by staff and institutions to local needs.

According to the WHO guidelines for developing countries to support them in the production or maintenance of quality data, the frequency of data submitted to each level should be clearly stipulated and communicated, assisting in minimising data collection processes at each level (WHO 2004:13).

As evidenced by South Africa while developing the District Health Information System (DHIS), a survey conducted in the Eastern Cape Province revealed that health workers are faced with myriad books and forms, all used to collect information for specific managers, but with minimal integration and lack of vision for its utilisation at the local level. The survey further revealed that data collected by clinic staff seemed inappropriate for adequate management service (Shaw 2005:633).

1.2.2 Completeness of data

Quality improvement and timely dissemination of quality data is essential in assisting health authorities at all levels to take effective decisions in disease control. Similarly, the success of the "*Stop TB Strategy*" depends on reliable recording and reporting systems of TB surveillance that effectively provide information and reports on the components of assessing the TB control and management programme (Nadol et al 2008:58).

A consultative meeting which was held in Nairobi, Kenya, in 2002 was called to write the final report to develop proposals for collaborative TB HIV/AIDS (Human Immuno-deficiency Virus/Acquired Immune Deficiency Syndrome) programme activities. It further emphasised the importance of data quality influenced by incomplete data, particularly at district levels, contributing to delays in timely decision-making regarding the implementation of TB control and management activities (WHO 2002:8).

The advent of the Electronic Tuberculosis Register (ETR) in data collection relies on data collection tools at health facilities that significantly influence the quality of data, which includes the completeness of data collected. The experience in Botswana in this regard highlights problems in the paper-based TB data collection system (Vranker, Coulobier, Kenyon, Koosimile, Mavunga, Coggin & Binkin 2002:112). However, this is attributed to the inability of the District TB Coordinators (DTC) to provide continuing support to the individual health facilities.

An effective TB control programme could be achieved through regular training and supervision of health personnel. The net result of this may contribute to an information culture at all levels of staff and further enhance production of quality data, with the positive results mentioned.

1.2.3 The Namibian TB control and management programme

The Namibian TB programme receives technical support from the Tuberculosis Coalition Assistance Programme (TBCAP) and funding from the Global Fund. According to the Tuberculosis Coalition Technical Assistance (TBCTA) 2005 report, the body provides the following support to the Namibian TB programme. This mainly includes training of health personnel, reviewing Tuberculosis Recording and Reporting (TB R&R), providing infrastructure to support case management and strengthening Health systems by providing ICT equipment (TBCTA 2005 www.tbcta.org/TBCTA_Project/Results.php 2009-07-31).

The management of the TB programme is decentralised up to the district level. The Medium Term Plan One (MTP 1) of 2004-2009 indicates that since 1991 the DOT strategy has been adopted (MoHSS 2004:5). To date, the country has achieved coverage of 100%; hence all public health facilities are implementing the national the DOT strategy as part of the National TB control programme.

At the district level, the District TB register and the ETR are the core data collection tools available (MoHSS 2006:50). These registers are useful in compiling and comparing progress made at each level. They are valuable in reporting treatment success rates, assisting in follow up of patients and ensuring treatment adherence. The district quarterly report on TB case-finding is generated from the individual patient's notification data record in the ETR and district register; this is then aggregated to regional and national levels. To date, the programme does not employ data clerks charged specifically with the responsibility of updating the TB registers. However, these responsibilities are performed by the DTC, who is in charge of the TB programme at district level. The DTC works under the supervision of the PHC supervisor, who reports to the Special Programme Health Administrator (SPHA) at the regional level. At the facility level, the nurses main functions in the TB programme, is to enter data and

ensure that data quality is maintained as well as to report monthly to the DTC on the caseloads in the facility and other treatment outcomes as stipulated in the TB guidelines (MoHSS 2006:51).

1.2.4 Oshakati District TB control and management programme

According to the 2006/2007 region report, the Oshana region notified 1470 TB cases and a CNR of 830 per 100,000 populations (MoHSS 2008[a]:11). The report further reveals that the region was ranked fifth amongst the 13 regions of Namibia (MoHSS 2008:29). The district participates in the quarterly zonal review meeting for the North Central regions funded by TBCAP which are TB based. The zonal meetings of the North Central regions comprise four regions known as "Ovamboland"; this includes Ohangwena, Oshikoto, Omusati and Oshana regions (National Planning Commission 1997:22).

To date, 12 zonal review meetings have been conducted, with the last being conducted in the Omusati region in January 2009 (MoHSS 2009:2). One major benefit of these meetings is to make available opportunities for the regions to share the achievements of each quarter and to undertake a peer review of each district's records. However, the information shared in these meetings is district based and not facility based. According to the 12th review meeting, aspects of ensuring data quality were not incorporated in detail in the presentations by each district. However, one aspect of data quality highlighted by Oshakati District during this meeting revealed that data on the MDR situation was not available for assessment of the progress achieved during the reporting quarter (MoHSS 2009:10).

1.3 PROBLEM STATEMENT

The burden of TB in Namibia was reported to be 765 per 100 000 people in the 2006/2007 annual report (MoHSS 2008[a]:6). Quality data involves recording and reporting of existing, newly diagnosed and known TB cases. This fulfils a key role in strengthening health systems and in improving the quality of data collected that is useful in monitoring and evaluating programme performance. This is supported by the WHO Stop TB strategy (2006:11) which emphasises the need for reliable data that supports monitoring and evaluating the performance of strategies in TB control. There is limited

documented information on steps taken to ensure data quality in the TB control programme in Namibia, particularly in Oshakati District where the prevalence of TB is high. This is evidenced by the health reports presented during the quarterly review meetings by the Ministry of Health (MoHSS 2009:10). Therefore this study addressed factors that influenced the quality of data for TB control management which play a crucial role when assessing treatment outcomes, early identification of programme needs as well as identifying gaps in TB management programmes.

1.4   SIGNIFICANCE OF THE STUDY

This study investigated the factors influencing the quality of data in the TB control programme. The results of the survey will assist in programme planning at all health operational levels as a basis for TB control and management, specifically the monitoring and evaluation component, as well as identified implementation gaps. It would assist in developing monitoring and evaluation tools and revising existing TB guidelines. It would further improve the data collection tools that are currently being used, assist in revising related health policies and integrating the existing health systems for efficiency and effectiveness. Lastly, the information is intended to contribute to strengthening data collection practices geared towards the strengthening of TB control and management efforts in Oshakati District.

1.5   AIM OF THE STUDY

The aim of this study was to investigate factors influencing the quality of data in TB control programmes in Oshakati District, Namibia.

1.6   OBJECTIVES OF THE STUDY

The objectives of this study were to

- determine the demographic characteristics of nurses involved in TB control programme in Oshakati District, Namibia
- describe the various factors influencing the quality of data in TB control programme in Oshakati District, Namibia

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- measure the association between the demographic characteristics and factors influencing data quality in TB control programme in Oshakati District, Namibia

1.7   DEFINITION OF CONCEPTS

In this study the following words and/or phrases had the following meaning ascribed to them unless the text indicates otherwise.

Data quality. It refers to the characteristic that describes data excellence which includes the reliability and accuracy of data collected (Kirch 2008:213).

Completeness of data. It refers to the percentage of data missing at a given period of time. For example, a medical record must contain all data identifying the patient, all data from attending doctors, all nursing notes and all data must be signed and dated (Kirch 2008:199).

Data collectors. These are personnel who are assigned the responsibility of collecting various aspects of health-related information. In health care, they range from doctors, nurses and laboratory personnel to administrative staff, to mention a few (Kirch 2008:197).

Information systems. This is the collection and integration of various processes of hardware, software and human resources that meet the data collection, storage, processing and report generation needs of an organisation or programme (Marin & Bakken 2001:3).

Health system strengthening. These are guiding principles, processes and tools that, when taken together, outline a road map for strengthening health information systems (WHO 2008[c]:2).

Reporting. This is the culmination of a series of conditional events (eg laboratory confirmation, laboratory testing) (Novick, Morrow & Mays 2007:409).

Recording. This is the orderly process by which one indicates a total plan of procedures directed towards specific stated goals, each designed to prevent disease or enhance the health of an individual or community (Kirch 2008:1228).

1.8   RESEARCH METHODOLOGY

1.8.1   Research design

A descriptive, cross-sectional quantitative design was used for this study to describe the factors influencing the quality of data for TB management in Oshakati District, Namibia. The advantages of this study design are its appropriateness for describing the status of phenomena or relationships at a fixed point while bearing in mind the resources available to conduct the study (Polit & Hungler 1999:162).

1.8.2   Population of the study

The study population can be defined as that group of people, items, objects or elements who meet the designated set of criteria for the study and about whom one wants to draw a conclusion(s) (Babbie & Mouton 2003:100).

In this study population involved different cadres of nurses working at the Oshakati State Hospital from different departments, namely; TB clinic, TB ward, HIV clinic, medical wards for both male and female patients. Student nurses were also included in the study since Oshakati State Hospital is a training institution for registered nurses. The population for this study is fully described in chapter 3 of this dissertation.

1.8.3   Sampling technique used for this study

Random stratified sampling technique was used for this study in order to select a representative sample of participants from the target population. This technique is applied, to give every homogenous group of the target population an opportunity to be represented in proportion to the number of its members in the population. According to Kothari (2004:77), stratified sampling tends to yield more reliable results and provides detailed information. In addition, it assists in sharpening the precision and representativeness of the final sample (Polit, Beck & Hungler 2001:242). The sampling technique is fully described in chapter 3 of this dissertation.

1.8.4   Data collection

Data was collected by means of a semi-structured questionnaire designed by the researcher. A questionnaire which was written in English was distributed to 50 study participants. It included both close-ended and open-ended questions. This was done in order to gather more in-depth information that would not have been captured in the structured questions. All the questions on the questionnaire were fully explained to participants. According to Polit et al (2001:269), this method of data collection tends to be more reliable, since it reduces the chances of misinterpretation by respondents.

1.8.5   Data analysis

Data was coded, entered into an MS Excel spreadsheet and analysed by means of descriptive statistics which included the use of frequencies and percentages, which were presented using tables and graphs. In order to determine associations between demographic characteristics and factors influencing data quality, a chi-square test was used which also evaluated the level of significance between these variables. The assistance of Statistical Package for Social Sciences (SPSS) version 3.0 was sought for analysis.

1.8.6   The concept of validity

Validity is defined as the degree to which an instrument measures what it is supposed to be measuring (Polit et al 2001:308). To ensure internal validity, all participants were given the same questionnaire which contained the same questions. The tool was pre-tested using five nurses who were not included in the main study. The aim was to ascertain if the tool measured what was intended. In addition the tool was reviewed by the study supervisor and revisions were made according to recommendations provided.

1.8.7   The concept of reliability

Reliability is the consistency with which a measuring instrument yields certain/similar results when the entity measured has not changed (Leedy & Ormond 2005:29). The same questionnaire was applied to collect data from the participants. The researcher personally undertook data collection with the aim of ensuring the reliability of the information collected.

1.8.8 Ethical consideration

A permission letter (annexure 1) was requested and obtained from the medical superintendent of the study site to conduct the study. The researcher further ensured that the research was in line with all ethical guidelines, by obtaining informed consent from the participants prior to conducting the study but after providing them with a detailed information about the aim and objectives of the study. This was done to ensure that participants were aware and willing to be involved in the study.

Scientific honesty on the part of the researcher was insured by obtaining approval from the Research and Ethics Committee of the Department of Health Studies at the University of South Africa (Unisa). In addition, consent was obtained from the management team of Oshakati State Hospital, including informed consent from the study participants. The final dissertation will be shared by both Unisa and Oshakati District Management (Emmanuel, Wendler & Grady 2000:2701).

1.9   LIMITATIONS OF THE STUDY

The findings in this study are limited to nurses working at Oshakati State Hospital, as the main point of entry for diagnosis of TB patients in Oshakati District. Since the study was done in a specific context, findings cannot be generalised; but the study could be replicated in other hospitals outside Namibia. Also, the recommendations are based on the findings and may not be relevant to other areas in Namibia.

1.10   STRUCTURE OF THE DISSERTATION

This study consists of five chapters:

Chapter 1   Orientation to the study
Chapter 2   Literature review
Chapter 3   Research design and methodology
Chapter 4   Data analysis and presentation of data
Chapter 5   Conclusions, recommendations and limitations of the study

1.11 CONCLUSION

This chapter outlined the background to the research problem and highlighted the fact that the success of TB programmes relies on quality data generated at facility level. This ultimately contributes to monitoring of progress towards achievement of desirable TB treatment outcomes. The main purpose of the study was to investigate factors influencing the quality of data in TB control programmes in Oshakati District, Namibia. In chapter 2, a review of the literature will be provided.

CHAPTER 2

Literature review

2.1   INTRODUCTION

This chapter furnishes an in-depth understanding of the concept of data quality, its historical development, variables, dimensions and consequences. It also outlines the models and theories explaining the basis of data quality and the independent variables influencing it. The chapter further critically examines the findings of previous related studies conducted on this subject. The researcher subsequently illustrates the conceptual framework of the research and describes the gaps it intends to fill for this particular study.

2.2   DATA QUALITY

The WHO's (2003[a]:10) guidelines of adopted the definition by Donebedran (1988) who defined data quality as consisting of the ability to achieve desirable objectives using legitimate means of data acquisition. In addition, the document provides Adbelbak's (1996) definition which states that quality represents what was intended or defined by their official source, and that data are objective, unbiased and comply with known standards.

The WHO's (2003[a]:10) guidelines and Battin and Scannapieco (2006:6) display similarities regarding the components of data quality which include the following:

- Accuracy of the original source data.
- Reliability of data must be consistent and information generated must be understandable.
- Completeness of all required data must be presented.
- Legibility of data is crucial.
- Currency and timeliness which include data recording at the point of observation.
- Accessibility of data to authorised persons when and where needed.

- Meaningful or usefulness of data collected information is essential (WHO 2003[a]:10).

2.3 IMPORTANCE OF THE QUALITY OF DATA

A famous statement by Florence Nightingale aptly captures the performance-quality-management relationship. She stated that "*the ultimate goal is to manage quality, but you cannot manage it until you have a way to measure it if you cannot monitor it*" (Arch, Khazinga & Delnoi 2003:377).

Sound and reliable information forms the foundation of decision-making across all health systems. The WHO (2008[c]:3) toolkit draft states that data is essential for all such systems, specifically in areas such as the policy development and implementation, governance and regulation, health research, human resource development, health education and training, service delivery and financing (WHO 2008[c]:2). The data collected assists in assessing a programme's performance, and therefore, contributes towards the development of a plan for the improvement of performance (WHO 2008[c]:4).

This is further emphasised in the 2003 WHO's (2003[a]:10) guidelines which proclaim that quality data is crucial, not only for use in patient care but also for monitoring the performance of health services and employees (WHO 2003[a]:11).

Quality data is gaining visibility daily as an important element in data management. According to Olson (2003:29), the challenge of the lack of management of the content of data collected is emerging as a major issue. This has had a negative impact on organisations where the lack of quality data is causing large losses in money, time and missed opportunities for effective interventions. This is also applicable in public health, whereby data is routinely used to identify areas of improvement that will subsequently assist in the control of diseases in community health services. The author further states that quality data requires careful attention to the design of systems, constant monitoring of data collection and aggressive anchors to correct problems that generate or propagate inaccuracies in data management (Olson 2003:30).

2.4   QUALITY ASSURANCE IN HEALTH CARE

Donabedian and Bashshur (2003:1) defined quality assurance as all actions taken to establish, protect, promote and improve the quality of health care. Quality assurance also involves monitoring and maintaining of the quality of health programmes and services. This involves licensing and training of health professionals, licensing of health facilities and enforcing compliance to set standards and related regulations. Rowitz (2009:25) concurs with most studies reviewed wherein quality assurance is a term used interchangeably with continuous quality improvement (CQI).

The main components of quality assurance, according to Donabedian and Bashshur (2003:3), include

- system design and resources
- performance monitoring and readjustment

Professional recruitment, training and certification are conducted in terms of system design and resources. This also includes the number and distribution of items of equipment and licensing of hospitals and health care facilities. On the other hand, performance monitoring and readjustment are components wherein information is obtained about the level of quality produced by the health system and that information is interpreted so as to take the action needed to protect and improve quality. This may take two forms, namely (Donabedian & Bashur 2003:4):

- Activities meant to educate and motivate persons directly
- Readjustment in system resources and design

2.5   KEESLER MODEL

The Keesler model (as shown in figure 2.1) illustrates the importance of constructing an information management system that requires quality data for quality decision-making (Hakim 2006:150). This model is used at the Keesler Medical Centre (United States of America [USA]). This model emphasises that data quality is a mantra of everyone in the organisation. This supports the production of quality data that assists in ensuring a solid foundation for decision-making. Ramsaroop, Marion, Doughlas and Beaulieu (2001:149)

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state that the Keesler model has been mostly useful in data entry; which is known to be the most common source of data error influencing the quality of data in the data management process. This model comprises of a seven step continuum as shown in figure 2.1 below.
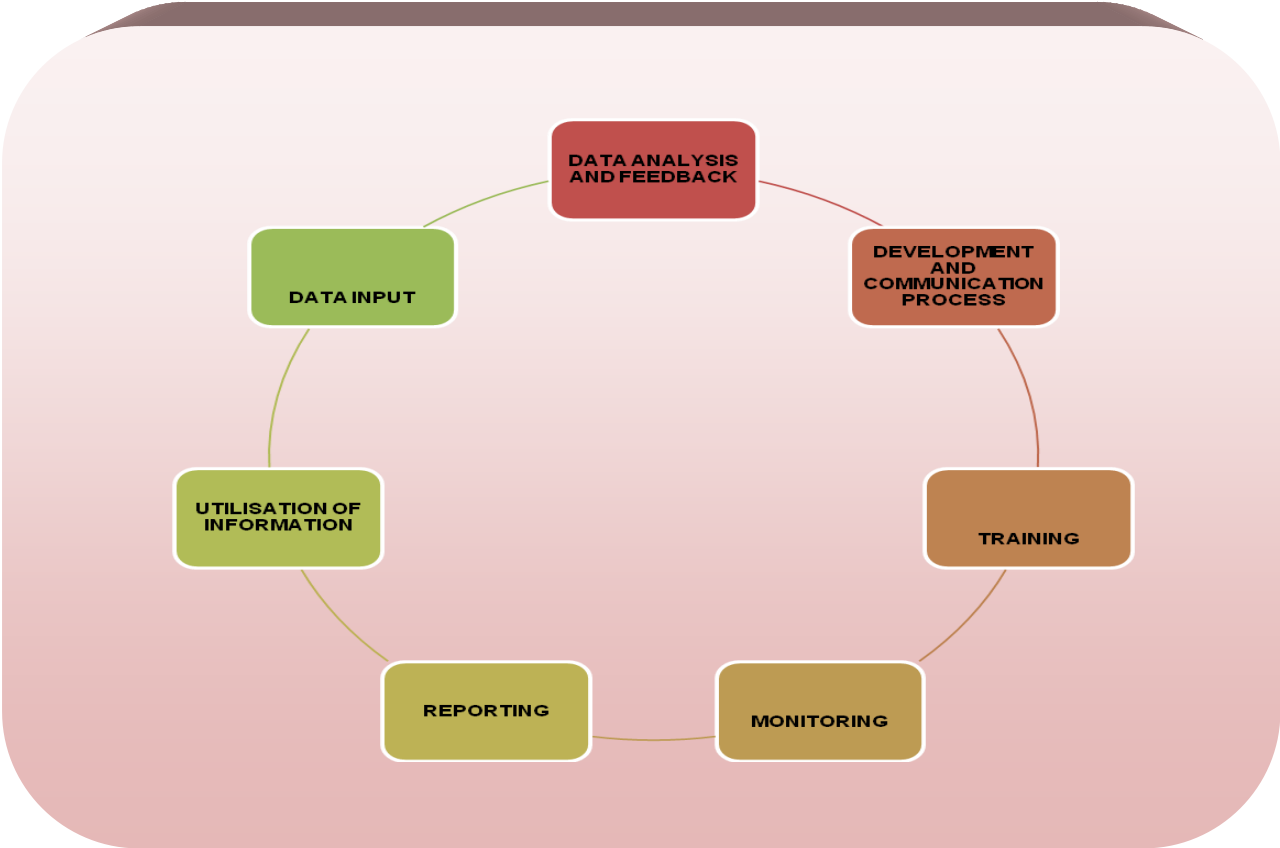
Figure 2.1   Keesler model

(Ramsaroop et al 2001:150)

2.6   QUALITY OF HEALTH CARE SERVICES

A concise, meaningful and generally applicable definition of quality in all fields and professions including health care is difficult to arrive at. Quality may be looked at from two perspectives, either by the service provider which is furnishing service or by the consumer who is supposed to have received quality service. There is growing consensus that what the service provider believes in as quality service may not hold true for the consumer (Delisa, Gans, Walsh & Bockect 2004:530).

Health providers, therefore, need to measure the quality of their services to meet the needs and expectations of consumers. This contributes to improvement through a

specific sort of practice, intervention, or policy that aims at the targeted population through collective means. According to Dawson and Verweij (2007:25), this type of approach emphasises that public health interventions are not primarily actions of individual persons, but involve some form of collective action.

2.6.1 Total quality management/continuous quality improvement

Roussel, Swansburg and Swansburg (2006:406) define total quality management (TQM) as a structured systematic process for planning within an organisation. TQM is also defined as a state of mind; it is work ethics involving everyone in the company and involves participative management. The process of making decisions at lower levels within the organisational hierarchy is also incorporated in this model.

TQM emphasises collective responsibility versus individual responsibility, accountability versus autonomy, participatory versus administrative control, professional authority and benchmarking versus responding to complaints; these are common in other styles of management (Roussel et al 2006:406).

2.6.2 Approaches of measuring quality

There are various approaches that are used to measure quality. Customarily the client satisfaction method is commonly employed in doing so, which is primarily applied in health care to measure the quality of care. It should be noted that while using these tools to measure quality, one should avoid bias; giving customers freedom to complain if they wish. Delisa et al (2004:1185) stated that the point of these surveys is to gather information rather than manipulate a response to gain approval. Findings from a systematic review conducted in the United Kingdom to assess client satisfaction about the care rendered, recommended that certain issues need to be addressed to improve quality of data collected during these surveys. Such aspects included the best approach to be used in conducting such surveys, and strategies to ensure that results are acted upon (Crow, Gage, Hampson, Hart, Kimber, Storey & Thomas 2002:76).

Furthermore, using the audit tool in staff review committees to measure quality is an approach described by Gillam, Yates and Budrianath (2007:272), whereby audit tools are designed to monitor client specific aspects of certain levels of care. They may either

be concurrent, which evaluates the quality of ongoing and retrospective care, or take the form of an outcome audit, which evaluates quality after discharge. Jamtvedt, Young, Kristoffersen, O'Brien and Oxman (2006:13), state that audit feedback can be effective in improving professional practise. Additionally, they emphasise the need to measure practise with an aim to identify when efforts to change practise are needed.

Anomy, Preece and Ubrany (2002:171), however, stated that clinical audits emphasise high quality at the lowest cost. They press for greater performance rather than necessarily the best. The shortcoming for these audits is that they limit patient involvement, unlike the client satisfaction surveys.

2.7 FACTORS INFLUENCING DATA QUALITY DATA IN HEALTH PROGRAMMES WITH A FOCUS ON TB PROGRAMMES

Quality data is an important component in ensuring that data used in monitoring and evaluating programme activities is accurate and valid. Braga (2007:2) insists that good quality information is essential to evaluate the magnitude of disease transmission in a country and to define the goal of how many cases will be treated. He further emphasises that poor quality information hinders one from evaluating whether action has been taken or whether the data has not been suitably entered into the information system.

2.7.1 Knowledge and training

Capacity building is a term used by many organisations in their quest to improve the quality of service. This term is used mainly when referring to improving the knowledge of individuals. However, a study in Zambia, which was used to assess the impact of the quality assurance programme, revealed that staff faced 'peer inertia' in their facilities (Bouchet, Francisco & Ovretveit 2002:90). This was influenced by the following factors:

- The small proportion of staff trained in each facility.
- Lack of trainee capacity to transfer their knowledge to their peers.
- Lack of authority of the trainee over the rest of the staff.
- Lack of follow up and technical supports (Bouchet et al 2002:90).

Similar sentiments are also expressed in a cluster randomised control study conducted in South Africa (SA) between 1996 and 2000 in nurse managed ambulatory primary care clinics (Lewin, Dick, Zwarenstein & Lombard 2005:250). The authors further indicated that health services and policy managers often assume that professional practice can be altered by training. The authors further quote the "*Stop TB*" Annual Review of 2003 which reports that 10 out of 22 high burden countries reported major deficiencies in staffing at the central level. This was further associated with inappropriate curricula that were not needs-based.

A retrospective study conducted in Zambia to assess the Ministry of Health records on TB notification was conducted between 1964 and 2001. The study noted a twelve fold TB case notification increase over the previous two decades. However, researchers were concerned about the accuracy of the data used which seemed to be dependent on several factors and a major critical one being a lack of capacity in the Ministry of Health to analyse data from the records that contained the annual returns from the provinces. The study further revealed that between 1997 and 1999, there was no data on CNR. One assumption made by the researchers was that there may have been a lack of trained staff who would identify this gap early (Moboshe, Chintu, Squire, Nyirende, Sunkutu & Zumla 2003:150).

There is a prevailing assumption that the more work experience one has gained the better the quality of care offered. A study relating to medical knowledge and health care quality revealed that 32 (52%) of 62 evaluations reported decreasing performance of medical practitioners with increasing years in practice (Choudhry, Fletcher & Soumerai 2005:269). The authors attributed this to the explicit knowledge of the physicians being outdated, compared to medical advances over time.

Zurovac, Rowe, Ochola, Noor, Midia, English and Snowal (2004:1084) conducted a study in Kenya to assess the effect of pre-service training aimed at improving the quality of health worker treatment practices for uncomplicated malaria. They found that effectiveness of pre-service training depended on the availability of second line drugs. Several reasons were given for this, one being that health care workers (HCW) may not be acquainted with how to prescribe second line drugs, and therefore avoid using them. The study further revealed that the lower cadre of nurses would rather use the treatment

algorithms than guidelines; this is unlike the practice of clinical officers and the higher cadre of nurses. The reason posited for this was that the algorithms employ less medical vocabulary as opposed to that of the guidelines (Zurovac et al 2004:1089).

2.7.2 Attitudes and quality data

The experience in Peru where a descriptive study was conducted to assess laboratory information revealed that the staff felt that the design of the information system did not meet their needs. Lessons learnt emphasised the importance of involving stakeholders in designing and implementation. Emphasis was placed on constantly consulting the users' questions about the system, the problems faced and on searching for practical solutions (Blaya, Shin, Yagu Yale, Suarez, Ascencios, Cegielsk & Fraiser 2007:44).

Referring back to the study in the Zambia Quality Assurance Programme discussed in the previous section, this provides further evidence that health workers' attitudes to quality control affect quality assurance programmes. However, the assessment revealed that health workers stated that guidelines were of limited use when it came to changing their everyday practice. One reason given for this was the discomfort of appearing ignorant if one consulted the guideline in front of a patient (Bouchet et al 2002:89). This further emphasises the assumption noted by Lewin et al (2005:256) in terms of which health service policy makers and managers often presuppose that professional practice can be changed by training.

In Malawi, Chaulagai, Kott, Moyo, Sambunkusi, Khunga and Maphini (2005:375) concluded that no matter how good the design of an information system is, it will be influenced by an individual's attitude. This is as a result of implementation of vertical programmes that have separate reporting requirements. This affects the health workers attitudes who feel burdened with the frequent reporting requirements. The attitudes are further influences their attitudes towards quality data when they do not comprehend how the data is used in decision making that influences their daily operations. The authors emphasised the fact that the effectiveness of a system depends on the internal desire, dedication and commitment of leadership to set an effective health service management regime in place.

Similar sentiments to those stated in Mozambique were expressed in Malawi while developing its HMIS.   In Malawi, the study states that despite the emphasis on maximising the use of data collected at local levels, the habit of regarding the collection of data as only being for reporting purposes is still deeply rooted in the system. This has resulted in Malawi experiencing issues related to completeness of data, affecting the indicator value generated from routine data; this result in the indicator always being lower than the actual, leading to reports being adjusted (Chaulagai et al 2005).

An assessment of the roles of laboratories in the effectiveness of TB programmes acknowledged the need of well trained staff in quality management. Ridderhof, Devin, Kam, Marayanan and Aziz (2007:354) argue that, without these in place, the result may be that clinicians forego the results of existing laboratory services in diagnosis and treatment. This is a common phenomenon where there is lack of trust and credibility concerning the quality, accuracy and validity of laboratory results.

As noted in the Malawian situation, guidelines are not always consulted due to feelings of inadequacy in the presence of patients; this contributes to poor quality data. In SA, Bheekie et al (2006:261) state that there are many factors that would influence the implementation of guidelines; these authors note that guidelines should be easily applicable to routine practice which takes into consideration local needs of practitioners. The study further states that internally produced guidelines and tailored interventions were found to be more effective than those delivered from the top down. The paper quotes Harvey and Latson (1996) who emphasise that 'ownership' is created by providing a sense of control over the direction of the programme. This eases the implementation of quality improvement.

According to the systematic review by Choudhry et al (2005:269), cited above, one reason given for older physicians' decline in performance was related to a decrease in their factual knowledge. It was assumed that perhaps the physicians' toolkits received during training were not regularly updated which resulted in a lack of familiarity with evidence-based medicine and quality assurance techniques. The more experience they had, the greater their seeming resistance to changes.

2.7.3 Practices and data quality

Practices are a variable that is closely linked to knowledge and attitudes. A good example is evidenced by views from Mozambique, which showed that daily work at health facilities is primarily patient-focused so that registration and reporting is viewed as a secondary task. The primacy given to patient encounters has an adverse impact on data collection procedures. A study quotes the example of condom or drug distribution, *"often the number of patients seen or condoms and drugs distributed will be estimated at the end of the day and entered into register books"*. This is due to the attitude that this information is not used for logistics (Baltazaar & Margunn 2004:18).

Lack of infrastructure to support HMIS is noted to affect the relaying of information to the next level in Mozambique. This resulted in weekly reports being delivered late. Appropriate books and registers are not supplied, forcing facility staff to revert to other forms of stationery in which data recorded may vary (Baltazaar & Margunn 2004:19).

A report in Indonesia assessing the extent to which rural communities seek care prior to diagnosis revealed limitations attributable to the proportion of incomplete data. The study notes that despite regular feedback that was provided to health workers on gaps identified, there seemed to be no improvement in the part of health workers in administering data collection tools correctly. This led to incomplete data, thus delaying many patients' starting on TB treatment (Mahendradhata, Syahrizal & Utarini 2008:396).

In a study conducted in Peru, while implementing their new laboratory information system, the e-chasque (a system that provides feedback to the user), users became enthusiastic when they realised that the system would provide them with useful information. Unlike the previous information system which required health centre personnel to enter data for reporting without receiving feedback, the new system was followed by continuous training of system users and assistance in monitoring its use; this ensured it would continue to meet users' needs (Blaya et al 2007:37).

The practice of providing feedback was also applied in the transformation of the Malawian HMIS. This was supported by quarterly feedback, supportive supervision and an annual review. The Malawian Health Management Information System (HMIS) faced

problems with incorrect diagnosis, as well as wrong coding and entry of incorrect fields. These problems were gradually minimised through systematic data verification and feedback on flows and inconsistencies (Chaulagai et al 2005:377).

An assessment of China's mortality registration states that a checking system is in place. This system evaluates timeliness of registration of deaths, completeness of entries in the registration form and accuracy of data entry. Errors detected from these checks were corrected through re-inquiry, which enhanced the usability of the datasets (Yang, Itu, Rao, Ma, Rao & Lopez 2005:10).

The perception of collecting data purely for administrative purposes is common in most settings. A study by Hangaro, McPake and Vickerman (2005:287) states that data in most developing countries is mainly collected for such purposes; this results in the information being viewed as of no value. It is, therefore, perceived as bureaucracy, as emphasised in the article on the Mozambique Ministry of Health situation (Baltazaar & Margunn 2004:1).

2.8   CONCEPTUAL FRAMEWORK

The conceptual framework is a pictorial representation of the variable of interest in the study and relationship between them. In this study, the researcher presents a summary of literature review which relates to and is pertinent to quality data in special programmes with emphasis on TB programmes. The literature review is not exhaustive but the work of various authors indicates that improving knowledge through adopting appropriate training programmes, change of attitudes of health workers towards data collection with its relevance to their work and practices that influence data quality. Feedback and supportive supervision have been found to improve the quality of data of health programmes.

The main variables in this study are, therefore, knowledge, attitudes and practices. These variables are considered in the study as independent variables. The variables will be analysed in relation to quality data, which is the dependent variable. The relationship between the independent and dependent variables is as summarised below in the schematic diagram given below.
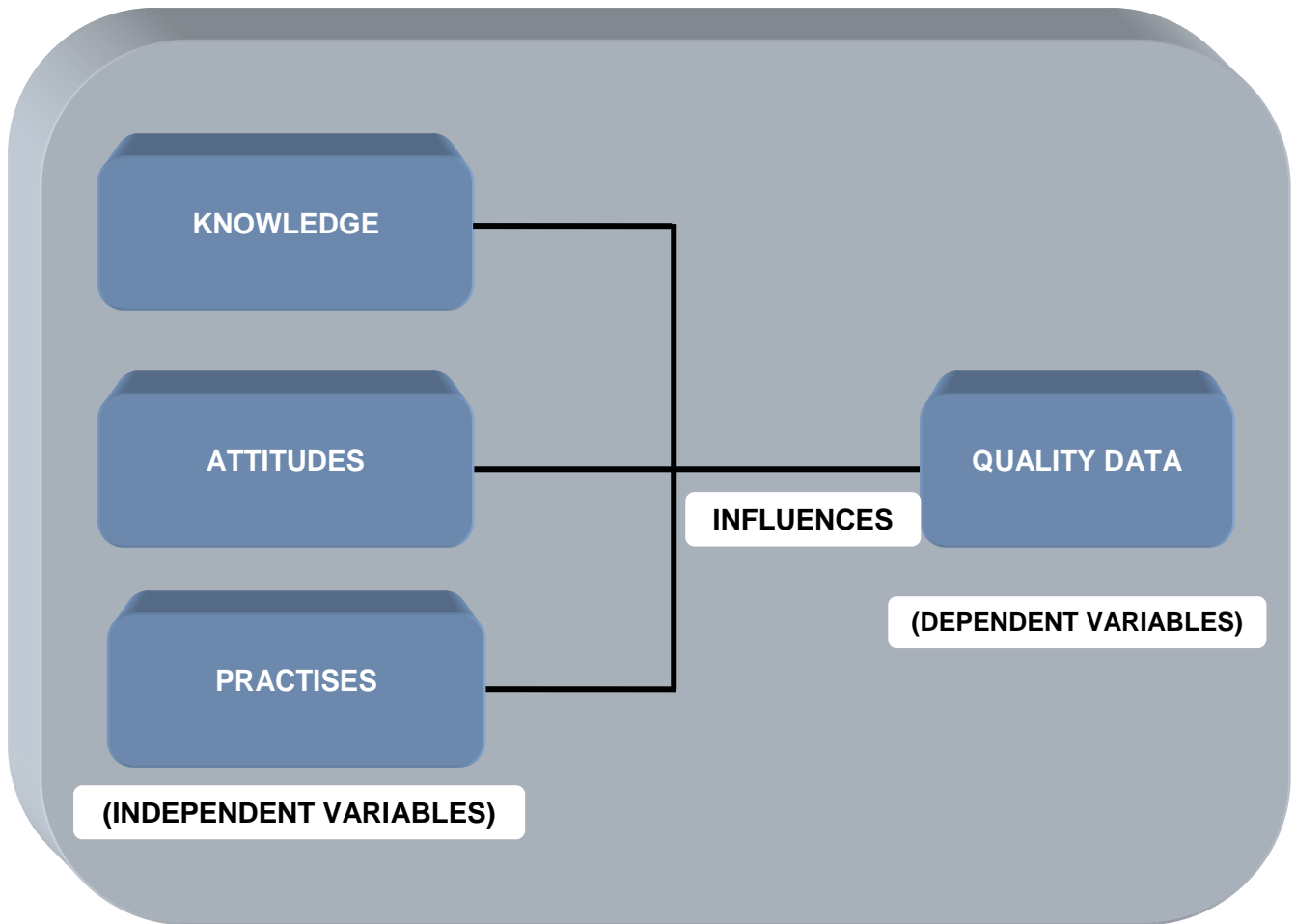
Figure 2.2   Conceptual framework

(Source: Researcher 2009)

2.9   CONCLUSION

This chapter discussed the literature review on factors influencing the quality of data in TB programmes including similar health programmes. Factors like training, knowledge on use of existing data collection protocols, attitudes of health workers with regards to the usefulness of data collected and practises influenced the quality of data.

Chapter 3 will discuss the research design and methodology used in this study.

CHAPTER 3

Research design and methodology

3.1   INTRODUCTION

This chapter discusses the research methodology and the study design that was adopted for this study. The sampling method, data collection tool and procedure are also presented in this chapter. Ethical considerations, the reliability and validity measured applied in this study are also presented. Research methodology refers to methods and procedures used in implementing research designs (Babbie & Mouton 2003:64).

3.2   RESEARCH METHODOLOGY

3.2.1 Research design

Research design is a plan that the researcher follows to be able to answer research questions and respond to the problem statement (Babbie & Mouton 2001:64).

A descriptive contextual cross-sectional design was used for this study in order to identify and describe factors influencing data quality for TB control programme in Oshakati District, Namibia. The study used a quantitative approach. According to Polit and Hungler (1999:440), cross-sectional studies are appropriate for describing relationships among phenomena occurring at a fixed point in time.

3.2.2 Research setting

The study was conducted at Oshakati State Hospital, Namibia. According to the current Oshakati District staff establishment structure (MoHSS 2008[c]), the district health team is headed by the principal medical officer who is responsible for all the health services in the district; this includes both the clinical and primary health care services. The clinical services are provided by the Oshakati State Hospital and the clinical personnel comprises of doctors, registered nurses and enrolled nurses. Oshakati District lacks a district hospital, which is customary in other districts as the state hospital is one of the

three intermediate hospitals in the country. Oshakati District was choosen as a study setting as it houses one of the intermediate hospitals, the Oshakati State Hospital. This institution serves the four north central region in Namibia and quoted by the National Planning Commission as the highest populated regions in Namibia (National Planning Commission 1997:20).

3.3   RESEARCH METHOD

According to Polit and Hungler (1999:440), a research method is composed of steps, procedures and strategies used by the researcher to investigate a research problem. The discussion of the research method includes the population, sample and sampling technique, data collection process and data analysis method.

3.4   POPULATION

The population targeted in this study was that of nursing staff currently working at the Oshakati State Hospital at the time of the research study. They were sourced from the following departments at Oshakati State Hospital: TB Clinic, HIV Clinic, TB Wards and Medical Wards (male and female wards).

These departments were chosen as they are the most common point of entry for TB diagnosis in Oshakati District. The targeted population was available during working hours; this is between eight o'clock in the morning and five o'clock in the evening.

The Oshakati State Hospital makes use of a staff establishment document that lists all the staff currently working in the hospital according to their various departments and nursing cadre. This was duly consulted during this study.

3.4.1   Sample and sampling technique

Sampling is the process of selecting a number of individuals, items, elements or objects from the larger population of the study in such a manner that they are representative of the study population from which they are selected (Polit & Beck 2008:339). In this study stratified random sampling where the targeted population was divided according to department was used to purposively select a sample focusing on the targeted

departments at the Oshakati State Hospital, which served as the sampling frame for the study.

According to Polit et al (2001:241), this sampling technique can sharpen the precision and representation of the final sample. Stratified random sampling is further regarded as desirable to obtain information about subpopulations whose membership is relatively small (Polit & Beck 2008:346).

A total number of 101 nurses who included student nurses attached to the targeted departments were identified. As stated in section 1.8.2 Oshakati state hospital and some departments this contributed to a higher proportion of students nurses compared to qualified nurses. The study was conducted at a time when the student nurses in the attached departments had completed their final examination for the year, and winding up the clinic hours for the course. According to the nurse in charges the student nurses at this level were able to fill the records with minimal supervision. This was viewed as a possible area that would contribute to the quality of data in the unit. Table 3.1 below shows the distribution of the targeted population according to department and nursing cadre.

Table 3.1   Distribution of target population (N=101)

DEPARTMENT	NURSES ON DAY SHIFT	REGISTERED NURSES	ENROLLED NURSES	STUDENT NURSES
TB CLINIC	9	2	2	5
TB WARD	16	6	6	4
HIV CLINIC	12	6	4	2
MALE WARD	20	7	6	7
FEMALE WARD	28	11	10	7
SPECIAL PROGRAMMES/PHC	16	5	7	4
TOTAL	**101**	**37**	**35**	**29**

(Source: MoHSS 2008[C])

The total number of study participants selected from the sampling frame of 101 was 50 nurses. The sample size was chosen at a ratio of 2:1 as stated in the proposal. This took into consideration the three shifts nurses' work in three out of the six targeted departments (that is morning, afternoon and night shifts) and also the regulation provided to the researcher of not conducting any interviews after five in the evening.

The participants who met the selection criterion were asked to voluntarily participate in the study, until the required sample size was reached. According to Polit and Hungler (1999:489), power analysis builds on the concept of effect size: the latter is concerned with the strength of the relationships among research variables. This assisted the researcher to choose the most effective sample size that would demonstrate the relationship statistically.

3.5   DATA COLLECTION

Data collection is a systematic process in which a researcher collects relevant data from respondents by asking questions or opening a conversation about a phenomenon as well as reading about a phenomenon under study (Polit & Beck 2008:369).

3.6   DATA COLLECTION METHOD

Data collecting tool used in this study was a questionnaire which consisted of both close and open-ended questions. This instrument followed the guidelines recommended by the WHO in developing the knowledge attitudes beliefs and practises surveys (WHO 2008[d]).

The data collection approach used was face to face interviews. This method was adopted owing to the different categories of respondents who were part of the study, with different levels of training and years of working experience. As attested in Sims and Wright (2000:72) this method of data collection assists in reducing structured complexity in the questionnaire. Sims and Wright (2000:72) add that face to face interviews assist in reducing the number of questions omitted, as compared to self-administered questionnaires. They also provide an opportunity to probe and ask for clarification. Polit and Beck (2008:415) likewise emphasise that face-to-face interviews increase the response rate.

The study's data collection instrument was limited to the three independent variables these were knowledge, attitudes and practices that influence the quality of data in the TB programme in Oshakati District. This assisted in ensuring the validity of the questionnaire, since the questions were designed to answer the issues related to the research variables (Wood & Brink 2005:204).

Data collection tool was divided in two parts: the first part collected demographic data which included:

- Demographic information
- Academic information
- Work experience
- Department where staff are working
- Current position

The second part of the questionnaire gathered data that described factors that influenced data quality for TB control at Oshakati State Hospital. This section was limited to knowledge, attitudes and practices related factors and other relevant factors. The questionnaire for this study is included in annexure 9.

3.7   DATA COLLECTION PROCESS

Data collection process took one month to be completed, as it was influenced by the workload in the department and the availability of identified study participants during the month of November 2009.

The study participants were then taken through the study, and were given information regarding what was involved and how this information would be used. The information sheet as indicated in annexure 4 was used as a guide during this process. This document contained the researcher's contact details which aimed to address any other concerns of the study participants. This was then followed by their signing a consent form before the commencement of the interviews.

Information was then collected using face-to-face interviews in the office assigned by the nurse in-charge in the respective department. The researcher choose to conduct face to face interviews as opposed to the study participants filling in the questionnaire due to the different level of qualifications of the study participants, some study did not have a good command of the English language and would need further clarification and rephrasing of the questions. The questions were asked in the exact sequence as it appears in the final questionnaire.

3.8   PRE-TESTING OF THE INSTRUMENT

Pre-testing of the instrument was done using five nurses who from the same hospital and the selected departments but who were not part of the sample for the main study. This was done in order to make the tool to be more appropriate and user friendly, to validate if the questions asked were clear and relevant and also to determine the time taken to complete the questionnaire. This also enabled the researcher to identify commonly misunderstood questions. Furthermore, the researcher got feedback on the validity of questions asked and the validity and reliability of the tool was established and confirmed.

The main areas that was adjusted was in relation to the options available to the respondents. The researcher added not sure as a response. This was necessitated as the respondents in the pre-testing session indicated that that they were sure which response to provide amongst the options listed; this was in relations to attitudes and practises. Additionally, the not applicable option was added as some of the options related to TB training attended did not apply to some respondents. Once the data collection tool was tested and actual adjustments made, the actual data collection proceeded.

3.9   DATA ANALYSIS

Data was analysed by means of descriptive statistical methods, which are used when a study does not intend to generalise beyond the study sample, as indicated by Wood, Kerr and Brink (2005:247-248). Analysis of the data was done in consultation with a statistician at the Kenya bureau of statistics, by means of SPSS version 3.0 for Windows. This statistical package was used to analyse measures of central tendency calculated which included the means of the individual independent variables as they occur.

As observed in Polit and Hungler (1999:450), the mean is the most appropriate index in situations in which the concern is for totals or the combined performance of a group. In addition, the mean is a stable measure of central tendency and tends to fluctuate less than the mode and the median (Polit & Hungler 1999:450).

The information was also presented using frequency distribution tables and percentages. Bar and pie charts were used to compare the responses from the study participants. This assisted clearly represent the proportions of responses with regards to various aspects influencing the quality of data as guided by the questionnaire. This type of data presentation is recommended in Gemish and Lacey (2006:422) as being the most suitable method to present categorised data.

Chi-square test is used to measure the significance of the results generated with the assistance of the SPSS. On the other hand, linear regression was used to show association, which would either be positive, negative or no association. As stated in Polit and Hungler (1999:487), this test is recommended when data is placed in categories and the research questions concern the proportions of cases that fall into the various categories.

3.10   VALIDITY AND RELIABILITY

3.10.1   Reliability of the instrument

Reliability refers to the consistency, stability and repeatability with which an instrument measures the attribute of concern in a research study (Polit et al 2001:305). This means that if the same questionnaire is administered at different times and intervals the responses should be the same.

In this study the results of the pre-testing of the instrument were compared with those of the main study in order to test the reliability of the instrument.

3.10.2   Data collection reliability

To ensure reliability of the instrument the researcher developed the questionnaire in consultation with the supervisor. The questions that were regarded as not clear were revised accordingly. According to Babbie and Mouton (2003:250), it is better to ask other people to complete the questionnaire rather than reading through it to look for errors. In this case the researcher the pre-tested the questionnaire using face-to-face interviews with five nurses at Oshakati State Hospital who were not part of the study.

3.10.3   Validity

Validity of an instrument is defined as the degree to which an instrument measures what it is supposed to be measuring (Polit et al 2001:308). Polit et al (2001:193-194) defines internal validity as the extent to which it is possible to make an inference that the independent variable is truly influencing the dependent variable. While external validity refers to generalisability of the research findings to other settings and samples. In this study, the relevance and validity was ensured by employing content validity, construct validity of the instrument and face validity as discussed below.

3.10.4   Content validity

Content validity refers to ensuring that all major elements relevant to the construct which is being measured are included in the method of measurement (Burns and Grove 2003:793).

In order to ensure content validity the researcher had to gather knowledge about the study phenomenon. This can be achieved by literature review of the area being researched and reflected in the structure of the instrument.

3.10.5   Construct validity of the instrument

Construct validity is an evaluation of the degree to which an instrument measures the construct the researcher wishes to measure (Kidder 1986:133). Pre-testing the tool and the use of constructed groups ensured construct validity in this study. Construct validity was also ensured by the study groups were mixed with different qualifications, they were also drawn from different departments and had varied years of work experience.

3.10.6   Face validity

Face validity is defined as measurements which appear to be measuring an item under study (Woods and Catanzaro 1998:557). In this study face validity was ensured by the supervisor with expertise in research methods who on reviewing the instrument was satisfied with its construction and the variables included.

3.11   ETHICAL CONSIDERATONS

Polit and Hungler (1999:701) define ethics as a system of moral values that is concerned with the degree to which research procedures adhere to professional, legal and social obligation to the study participants.

3.11.1   Permission to conduct the study

Ethical approval for this study was obtained from the Department of Health Studies at Unisa (annexure 2). Permission was also sought and obtained from the Ministry of Health in Namibia and the relevant authorities from Oshakati State Hospital (annexure 3). Informed consent was also obtained from the study participants prior to collecting data (annexure 6). Furthermore, the researcher ensured rights to confidentiality, anonymity, principles of justice and autonomy was maintained throughout the study.

3.11.2   Informed consent

During the actual data collection, the right to full disclosure of the purposes of the study was employed, whereby a full description of the study was provided to the study participants. The researcher also offered an opportunity for study participants to decline, accept or clarify information before embarking on collecting information. The right to self-determination and providing full disclosure of information are cited in Polit and Hungler (1999:136) as two major elements upon which consent is based.

The researcher ensured that honest answers were provided when obtaining informed consent from study participants. A standard information form adapted from Glatthorn and Joyner (2005:10) was developed and supplied to all study participants (annexure 4).

3.11.3   Confidentiality and anonymity

Participants were assured that data collected from them would not be made accessible to any person other than the researcher. This was done in order to maintain confidentiality. The questionnaire was coded and no identifiable information was used,

this was done to ensure anonymity and to ensure that the information provided would not be linked to a participant.

This practice prevents the researcher or any other person from linking a participant with information, as emphasised by Polit and Hungler (1999:139).

3.11.4   Principle of justice

In this study participants were fairly selected for inclusion in the study and they were treated with respect and dignity by using courteous and tactful approaches at all times. The study participant had ready access to the researcher as contact details for further enquiry was provided in the information sheet that was given to each respondent before the beginning of data collection. Additionally, the study participants were selected using random selection as indicated in section 3.4.1. According to Burns and Groove (2005:190) random selection reduces biases which enhances fair selection of study participants.

3.11.5   Persuasion

Participants were not persuaded or coerced to take part in this study, their participation was voluntary. No financial incentives were given to them. Participants were informed that they had the right to withdraw from the study or decline to answer any questions with no consequence or penalties. In addition, the information sheet was used to provide more information and an opportunity for clarification was provided. This was done to ensure that the participants were fully informed about the study.

3.12   CONCLUSION

The research design and methodology were discussed in this chapter. The study population, sampling technique and sample of the research was also discussed as well as data collection method and process. Measures for ensuring ethical soundness for this study were also described. The following chapter will present the results of data analysis for this study.

CHAPTER 4

Data analysis and presentation of findings

4.1   INTRODUCTION

In this chapter data that has been gathered is being analysed and interpreted. The sample consisted of nursing personnel selected from six departments from Oshakati State Hospital. A total of 55 nurses were approached of which 91% (n=50) gave an informed consent to participate in this study. A response rate of 91% was thus achieved, which was an adequate estimate for the purpose of analysis. According to Babbie (2007:262) a response rate of above 70% is good as there is less chance of significant response bias.

4.2   RESEARCH RESULTS

.This section describes the sample characteristics and details of the response rate. It further provides a detailed description of the research results as presented by the use of frequency tables and bar graphs. Chi-square was calculated to indicate the level of the significance of the various factors that were being measured. Finally, an overview of the findings is provided, from which conclusions will be drawn.

4.2.1 Socio-demographic characteristics

This section presents participants' socio-demographic characteristics, as illustrated in table 4.1. The study group age was categorised in five-year age brackets, with the lowest age category being 25 years and below and the highest 60 years of age and above. The age group of 25 years and below recorded the highest representation of 44% (n=22) of the whole study group, with 77% (n=17) of this group representing student nurses. Only 12% (n=6) of the nurses interviewed were degree holders. The study group was further categorised according to years of work experience, with the lowest category being 1-3 years of work experience and the highest was 14 years and above years of work experience. The category with the highest representation was amongst study participants with 1-3 years of work experience (36%; n=18) while the

lowest representation was amongst study participants with 14 years and above work experience.

Table 4.1   Participants' socio-demographic characteristics (N=50)

CHARACTERISTICS	FREQUENCY	PERCENTAGE	TOTAL
Gender			50
Male	8	16	
Female	42	84	
Age			50
<25 years	22	44	
26-35 years	6	12	
36-45 years	10	20	
46-55 years	11	22	
>55 years	1	2	
Qualification			50
Degree nurse	6	12	
Registered nurse	14	28	
Enrolled nurse	13	26	
Student nurse	17	34	
Years of experience			50
1-3 years	8	16	
4-6 years	2	4	
7-10 years	5	10	
11-13 years	4	8	
>14 years	13	26	
Student	18	36	
TOTAL	**50**	**100**	**50**

4.2.2.1   Participants' distribution per department

The results showed that the female medical ward had the highest representation in the survey with 28% (n=14). The least representation available at the time of the study was at the HIV clinic representing 12% (n=6) of the total study population (figure 4.1).
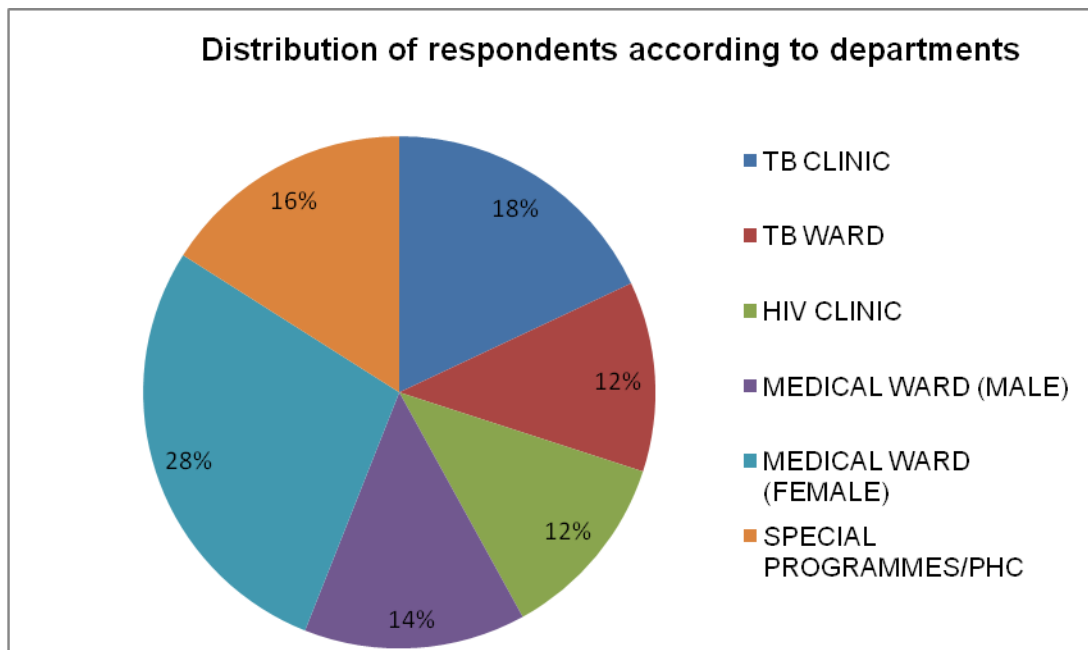
Figure 4.1   Distribution of respondents according to departments (N=50)

4.2.3 Factors influencing data quality

4.2.3.1 *Participants' level of knowledge*

This section of the questionnaire assesses the knowledge level of respondents related to components of data quality and the use of data collection tools. The respondents were asked questions that assessed their knowledge on various components which influence the quality of data collected in the TB programme.

4.2.3.2 *Assessment of knowledge levels on various components related to data collection and data quality*

Study participants were asked to rank their knowledge level in relation to data collection and data quality, with a score of 7 showing very high knowledge level while 1 to indicate lack of knowledge. Overall, entering information into the ETR yielded the lowest mean score of 2.63 and a Standard Deviation (SD) of 1.654, whereas filling in the TB records led to the highest mean score of 4.69 with a SD of 0.796 (figure 4.2). The results were however significant with regards to knowledge level reported on the use of TB records in TB management, when compared according to position in department (p=0.05 and r=0.054); this denotes a weak positive relationship.
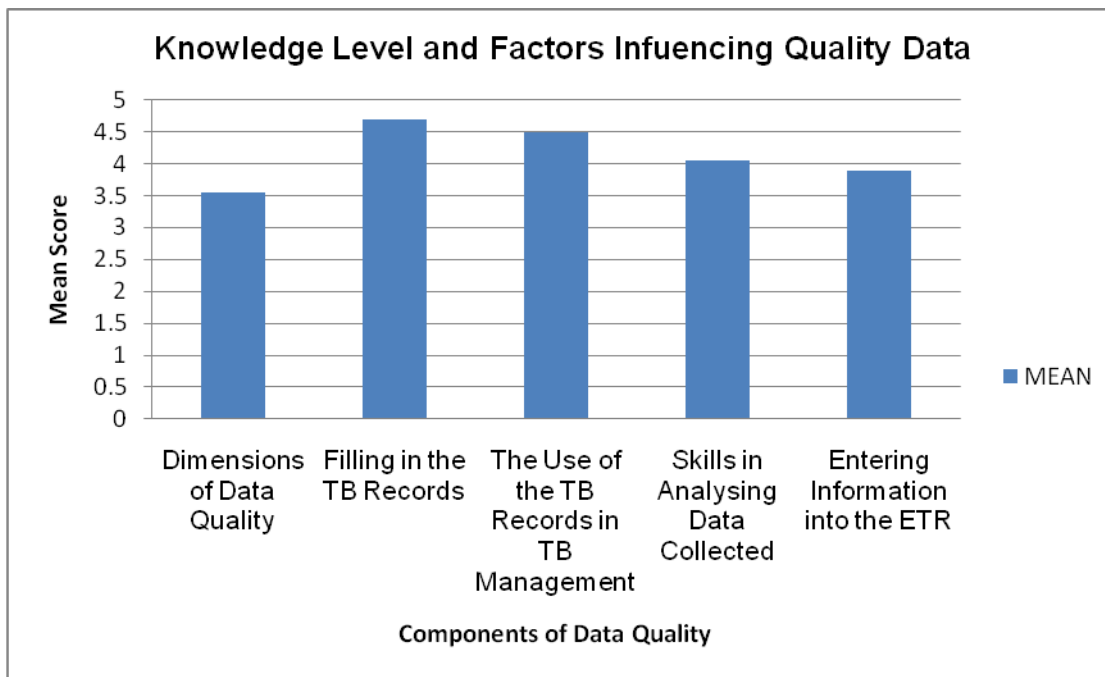
Figure 4.2 Factors influencing quality of data (N=50), 1 response missing

4.2.3.3 Knowledge level on use of TB records

The participants' knowledge level on the use of the TB patient treatment card yielded the highest mean score of 6.18 and a SD of 1.131, while the MDR side-effect form had the lowest mean score of 3.36 and SD of 1.918. However, the mean score of the TB register (which is the core document for recording all patients on treatment in the TB programme) achieved the third highest mean score of 5.37 and a SD of 1.752. The knowledge level on the use of the TB treatment card was statistically significant when compared according to nursing cadre (p=0.05) and r=0.001 indicating a weak positive association. In addition, the results were also statistically significant on knowledge level on the use of the IPT register when compared according to department (p=0.045 and r=0.488 indicating a positive moderate association in relation to department attached and knowledge level in use of TB records (figure 4.3).

DISTRIBUTION OF MEANS RELATED TO KNOWLEDGE ON USE OF DATA COLLECTION TOOLS
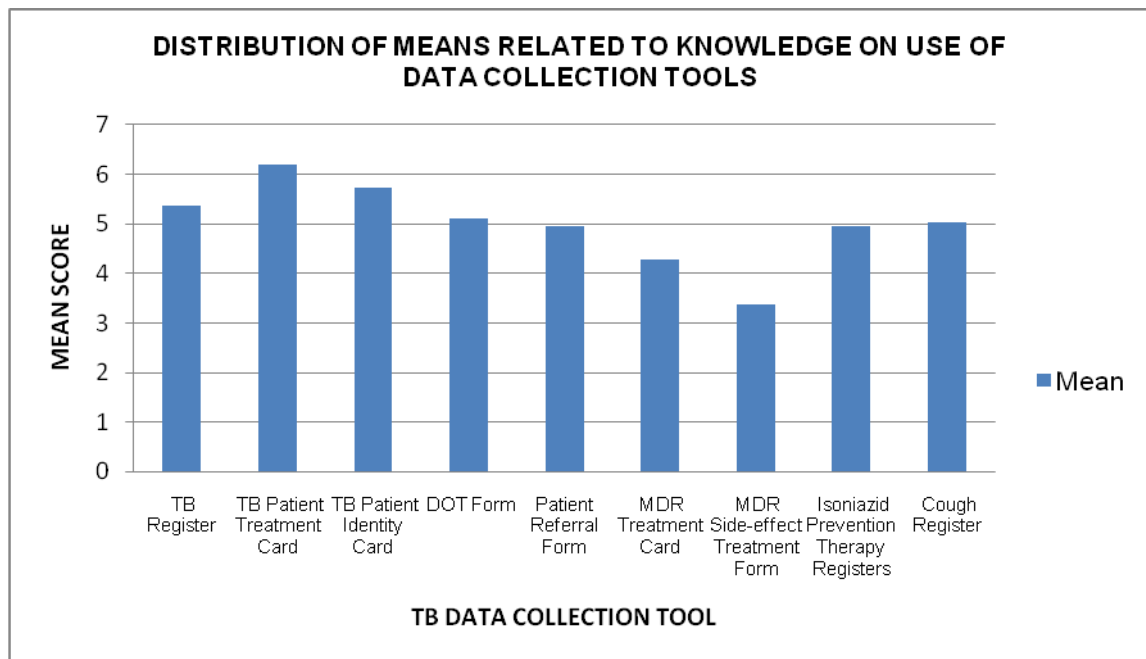
Figure 4.3   Mean scores related to knowledge level reported on the use of TB records (N=50), 1 response missing

4.2.3.4   Training received by participants

The respondents were required to furnish information related to their attendance of TB training, which included meetings or workshops. Of the 49 study participants who answered this question 61.2% (n=30) stated that they had attended TB training, meetings or workshops, while 36.7% (n=18) stated that they had not done so, and only 2% (n=1) were not sure if he or she had attended any form of TB training (figure 4.4).
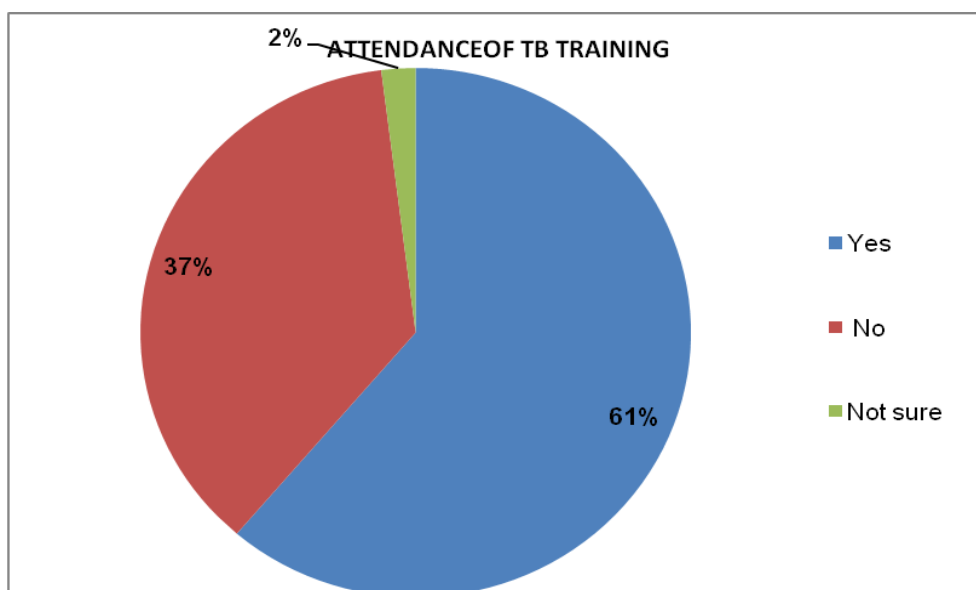
Figure 4.4   Attendance of TB training (N=50), 1 response missing

4.2.3.5   Nature of training received by participants

A high proportion of 49% (n=24) of respondents indicated that they attended in-service TB training, whereas only 2% (n=1) of respondents had attended 'trainer of trainer' training. 37% (n=18) of the study participants had not attended any form of TB training. This was indicated under the option not applicable.
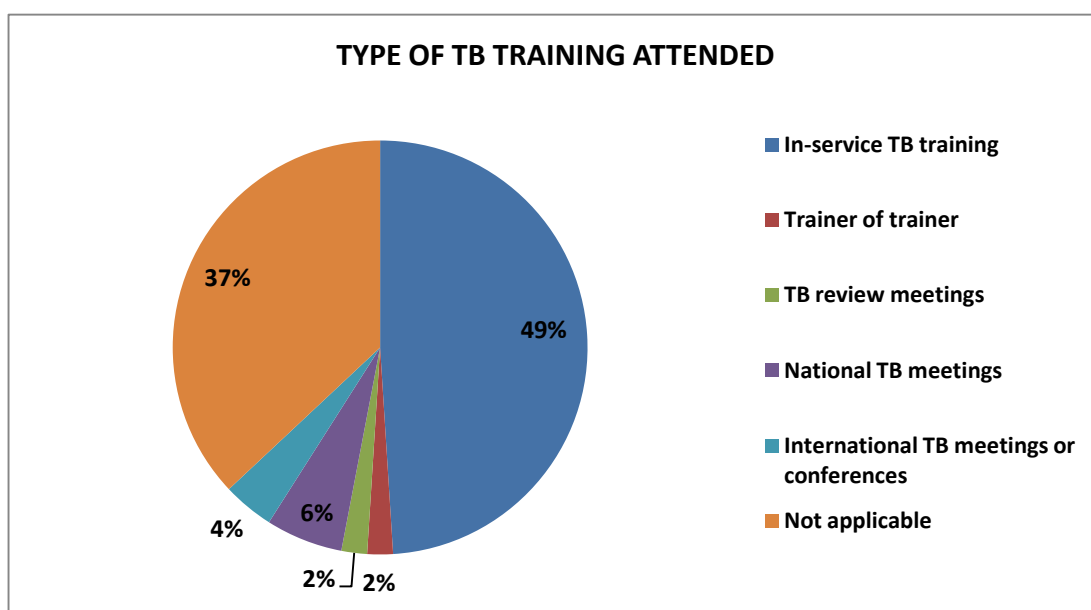
Figure 4.5   Nature of training received (N=50), 1 response missing

4.2.3.6 Distribution of nature of training received according to nursing carde and position in department

Comparing the study participants' attendance of TB training according to their nursing cadre, student nurses constituted the highest proportion of respondents with 24.5% (n=12) who had attended in-service TB training. Enrolled nurses comprised the category with the highest proportion of respondents of 18.4% (n=9) who had never attended any form of TB training. The trainer of trainer workshops were only attended by 2% of respondents categorised as special programmes/PHC nurses. International meetings were attended by both nurse managers and special programmes/PHC nurses, also at 2% in each group.

4.2.4 Participants' attitudes

This section assessed the degree to which the respondents thought that different attitudes and beliefs affect data quality. This was mainly carried out by ranking the degree to which they agreed or disagreed with various statements in relation to influencing the quality of data in Oshakati District.

4.2.4.1 Participants' views on attitudes as a factor that influence data quality

Participants were asked about their views on various statements, which they provided by giving a 'yes', 'no' or 'not sure' response. The section will further compare responses as described below. Frequency tables are presented and the chi-square used to determine the level of significance of each category.

4.2.4.1.1 Training on data management

This section deals with how TB data is managed at various levels in terms of recording and reporting. Of the study participants, 90% (n=45) agreed that TB training improves correct recording and reporting. Only 8% (n=4) of the study participants disagreed with this statement. There was triangulation of the data: comparing the information according to the nursing cadre, years of work experience, department to which attached, position

in the department and *p*-values calculated to measure the level of significance of the responses given (table 4.2).

Table 4.2   Distribution of TB training improving correct recording and reporting (N=50), 1 response missing

RESPONSE		FREQUENCY	PERCENT	VALID PERCENT	CUMULATIVE PERCENT
	YES	45	90.0	91.8	91.8
	NO	4	8.0	8.2	100.0
	TOTAL	49	98.0	100.0	
MISSING	SYSTEM	1	2.0		
TOTAL		**50**	**100.0**		

According to their cadre of nursing, 100% (n=14) of the registered nurses agreed with the statement, that training improves correct recording and reporting. Of the respondents who did not do so 50% (n=2) were enrolled nurses; *p*-value 0.377. The *p*-value in this section is higher than 0.05, showing the results were not statistically significant.

4.2.4.1.2 Number of training events, workshops and meetings by an individual staff member improves data quality in the unit

Seventy six percent (n=38) of the respondents agreed that the number of training events, workshops and meetings which an individual staff member attends improves the data quality in the unit. However, 12% (n=6) were not sure.

According to years of experience 100% (n=12) of respondents with 14 years and above work experience agreed that number of training events, workshops and meetings which an individual staff member attends improves the data quality in the unit. The results were statistically significant when compared according to years of work *p*=0.028 with *r*=0.170 indicating a positive association between number of trainings attended and its influence on quality of data in the TB control programme in Oshakati District (table 4.3).

Table 4.3   Frequency distribution of training events, workshops and meetings according to work experience (N=50), 1 response missing

RESPONSE	YEARS OF WORK EXPERIENCE						TOTAL
	Student	1–3 Years	4–6 Years	7–10 Years	11–13 Years	14 Years and above	
YES	14	5	1	4	2	12	38
NO	2	0	1	0	2	0	5
NOT SURE	2	3	0	1	0	0	6
TOTAL	18	8	2	5	4	12	49

4.2.4.1.3   Influence of TB training on rate of incomplete records

Reviewing results according to the influence of TB training on the rate of incomplete records demonstrated that 60% (n=30) of the respondents agreed with the statement, whereas 26% (n=13) disagreed with it (table 4.4).

Table 4.4   Frequency distribution related to incomplete records (N=50), 1 response missing

RESPONSE		FREQUENCY	PERCENT	VALID PERCENT	CUMULATIVE PERCENT
VALID	YES	30	60.0	61.2	61.2
	NO	13	26.0	26.5	87.8
	NOT SURE	6	12.0	12.2	100.0
	TOTAL	49	98.0	100.0	-
MISSING	SYSTEM	1	2.0	-	-
TOTAL		50	100.0	-	-

Comparing the data according to nursing cadre showed that student nurses made up the highest proportion of 69% (n=9) who disagreed with this statement. The results were statistically significant when compared according to nursing cadre; *p*-value 0.032, *r*=0.281 denoting a positive association, with regards to the influence of training on the rate of incomplete records in the unit (table 4.5).

Table 4.5   Distribution of responses related to incomplete records according to nursing cadre (N=50), 1 response missing

RESPONSE	NURSING CADRE				TOTAL
	DEGREE	REGISTERED NURSE	ENROLLED NURSE	STUDENT NURSE	
YES	5	9	9	7	30
NO	0	4	0	9	13
NOT SURE	1	1	3	1	6
TOTAL	**6**	**14**	**12**	**17**	**49**

In Malawi training and support of all health workers resulted in gathering of complete information by facility and by month for the first time (Chaulagai et al 2005:378).

4.2.4.2   Attitudes towards the various components influencing the quality of data in the TB programme

This section posed various questions that required the respondents to state the degree to which they agreed or disagreed with the statement. They were asked 12 questions related to training, supervision, management, workload, diagnosis of TB patients, usefulness of the forms and data generated.

4.2.4.2.1 Number of training events attended

Of the respondents, 48% (n=24) strongly agreed with the statement that the number of training events attended influenced the quality of data in the TB programme, while 40% (n=20) agreed with it.

Neither the enrolled nurses' nor student nurses' groups contained any respondent disagreeing with this statement, with 76% (n=13) of student nurses strongly agreeing with the statement; *p*-value was 0.008 and *r*=0.04 (table 4.6). According to work experience, 66% (n=2) with 11-13 years work experience disagreed with the statement; *p*-value 0.032 *r*=0.03 (table 4.7). From the TB clinic 88% (n=8) strongly agreed with this statement; *p*-value 0.042, *r*=0.495 (table 4.8). Comparing the responses according to position in the department, only respondents who were special programmes nurses (33%, n=1) and nurse managers, 33% (n=2) disagreed with this statement; *p*-value of 0.002, *r*=0.013 (table 4.9). The result in this case was statistically significant in all cases

denoting a strong positive association between the number of training events attended and its influence on the quality of data in the TB programme in Oshakati District.

Table 4.6 Distribution related to number of training events attended according to nursing cadre (N=50), 1 response missing

RESPONSE	NURSING CADRE				TOTAL
	DEGREE IN NURSING	REGISTERED NURSE	ENROLLED NURSE	STUDENT NURSE	
NOT SURE	0	0	2	0	2
DISAGREE	2	1	0	0	3
AGREE	2	7	7	4	20
STRONGLY AGREE	2	6	3	13	24
TOTAL	**6**	**14**	**12**	**17**	**49**

Table 4.7 Distribution related to number of training events attended according to years of work experience (N=50), 1 response missing

RESPONSE	YEAR OF WORK EXPERIENCE						TOTAL
	STUDENT	1–3 YEARS	4–6 YEARS	7–10 YEARS	11–13 YEARS	14 YEARS AND ABOVE	
NOT SURE	0	1	0	0	0	1	2
DISAGREE	0	0	0	0	2	1	3
AGREE	5	4	2	3	0	6	20
STRONGLY AGREE	13	3	0	2	2	4	24
TOTAL	**18**	**8**	**2**	**5**	**4**	**12**	**49**

Table 4.8 Distribution related to number of training events attended according to departments (N=50), 1 response missing

RESPONSE	DEPARTMENTS						TOTAL
	TB CLINIC	TB WARD	HIV CLINIC	MEDICAL WARD (MALE)	MEDICAL WARD (FEMALE)	SPECIAL PROGRAMMES/ PHC	
NOT SURE	1	0	0	1	0	0	2
DISAGREE	0	0	1	0	0	2	3
AGREE	0	4	2	5	7	2	20
STRONGLY AGREE	8	1	3	1	7	4	24
TOTAL	**9**	**5**	**6**	**7**	**14**	**8**	**49**

Table 4.9   Distribution related to number of training events attended according to position (N=50), 1 response missing

RESPONSE	POSITION					TOTAL
	NURSE MANAGER	SPECIAL PROGRAM-MES NURSE	REGISTERED NURSE	ENROLLED NURSE	STUDENT NURSE	
NOT SURE	0	1	0	1	0	2
DISAGREE	2	1	0	0	0	3
AGREE	1	0	7	7	5	20
STRONGLY AGREE	3	1	4	3	13	24
TOTAL	6	3	11	11	18	49

According to Blaya et al (2007:44) the user of the newly designed laboratory information system believed that frequency of training would support the collection of quality data.

4.2.4.2.2   Type of TB training

With regards to type of TB training attended and its influence on the quality of data, 47% (n=23) of the respondents agreed with the statement whereas 14% (n=7) disagreed.

Analysing results according to departments, it was clear that respondents who strongly disagreed with this statement were all from the medical ward (male) (n=2). The results were statistically significant when compared according to department; p-value 0.003 r=0.820, indicating a strong positive association between quality of data and type of TB training attended (table 4.10).

Table 4.10   Distribution related to type of TB training and department to which attached (N=50), 1 response missing

RESPONSE	DEPARTMENTS						TOTAL
	TB CLINIC	TB WARD	HIV CLINIC	MEDICAL WARD (MALE)	MEDICAL WARD (FEMALE)	SPECIAL PROGRAMMES/ PHC	
NOT SURE	1	2	1	0	0	1	5
DISAGREE	0	0	4	0	1	2	7
STRONGLY DISAGREE	0	0	0	2	0	0	2
AGREE	4	3	0	4	9	3	23
STRONGLY AGREE	4	0	1	1	4	2	12
TOTAL	9	5	6	7	14	8	49

4.2.4.2.3   Number of forms to be filled out for each patient

Out of the total number of respondents who provided their opinion, 58% (n=29) agreed with this statement while only 10% (n=5) disagreed that the number of forms to be filled out for each patient influences the quality of data in the TB programme.

Of the registered nurses, 71% agreed with this statement; *p*-value 0.475. Hundred percent (n=4) respondents with 11-13 years work experience agreed with it; *p*-value 0.241. Results were not statistically significant as the *p*-value was higher than 0.05.

Lessons learned in South Africa indicate a need for involvement of operational level staff in designing reporting needs. As the health workers tend to be faced with a myriad of forms and resulting in incomplete recording of activities affecting indicator values (Shaw 2005:637)

4.2.4.2.4   Trusting findings received from the laboratory

Of all the respondents, 56% (n=28) agreed with the statement that they trust findings received from the laboratory. Comparing the data according to nursing cadre, 62% of the student nurses strongly agreed with this statement; *p*-value 0.182. At the same time, 100% (n=5) respondents attached to the TB ward agreed with the statement; *p*-value 0.144. The *p*-value in all cases was higher than 0.05, indicating the results were not

statistically significant.

According to the WHO (2003[b]:3) demonstrates the direct influence of the trust health workers have on and its direct influence the outcomes indicators, in particular the cure rate.

4.2.4.2.5   Data collected is used by decision-makers

The percentage of respondents who agreed that the data collected is used by decision-makers was 41% (n=20). Comparing the data according to nursing cadre, 83% (n=5) of nurses with degrees agreed with this statement; *p*-value 0.05, *r*=0.281 (table 4.11). Those with 14 years and above of work experience recorded 50% (n=10) of total respondents who agreed in this regard; *p*-value 0.035 *r*=0.994 (table 4.12). These findings indicate a strong positive relationship between attitudes of respondents on the quality of data if it is used by decision-makers.

Table 4.11   Distribution related to data collection and use by decision-makers according to nursing cadre (N=50), 1 response missing

RESPONSES	NURSING CADRE				TOTAL
	DEGREE IN NURSING	REGISTERED NURSE	ENROLLED NURSE	STUDENT NURSE	
NOT SURE	1	3	2	2	8
DISAGREE	0	3	0	1	4
STRONGLY DISAGREE	0	0	0	3	3
AGREE	5	5	7	3	20
STRONGLY AGREE	0	3	3	8	14
TOTAL	**6**	**14**	**12**	**17**	**49**

Table 4.12   Distribution related to data collection and use by decision-makers according to years of work experience (N=50), 1 response missing

| RESPONSE | YEARS OF WORK EXPERIENCE | | | | | | TOTAL |
	STUDENT	1–3 YEARS	4–6 YEARS	7–10 YEARS	11–13 YEARS	14 YEARS AND ABOVE	
NOT SURE	2	2	1	2	0	1	8
DISAGREE	1	1	0	2	0	0	4
STRONGLY DISAGREE	3	0	0	0	0	0	3
AGREE	4	2	1	0	3	10	20
STRONGLY AGREE	8	3	0	1	1	1	14
TOTAL	18	8	2	5	4	12	49

The situation in Mozambique indicates that the attitudes of the workforce towards recording and reporting directly influences the quality of data in health programmes, as evidenced by incomplete forms in used to regulate stock (Baltazaar and Margunn 2004:1). In addition, Chaulagai et al (2005:375) cited that the attitudes related to the utilisation of information collected for taking decisions and management, resulted in little improvement producing complete records, which were used to generate programme reports.

4.2.4.3   Usefulness of TB records in TB management

This section of the questionnaire asked the study participants to rate the TB records according to how useful they are in TB management.

The TB treatment card singled out as the most useful data collection tool across all the categories the data was compared against. The highest mean score stemmed from the respondents categorised as nurses with degrees (mean score 7 and a SD of 0). The least useful data collection tool in the TB programme was the MDR side-effect form. According to nursing cadre, the lowest score stemmed from the enrolled nurses (mean score 2.82 and a SD of 1.99). The data was analysed further using the chi-square test, which revealed a strong positive association ($p=0.002$, $r=0.622$), related to attitudes of study participants and usefulness of the MDR- Side effect when compared according to nursing cadre (figure 4.6).

MEAN SCORE OF USEFULENESS OF TB RECORDS ACCORDING TO NURSING CADRE

Legend:
- TB register
- TB patient treatment card
- TB patient identity card
- DOT form
- Patient referral form
- MDR treatment card
- MDR side- effect treatment form
- Isoniazid Prevention Therapy registers
- Cough register

X-axis: Nursing Cadre (Degree in nursing, Registered nurse, Enrolled Nurse, Student Nurse)
Y-axis: Mean Sscore

Figure 4.6   Distribution of mean scores related to usefulness of TB records according to nursing cadre (N=50), 1 response missing

In Malawi, the attitudes related to the usefulness of record for reporting purposes directly influences the completeness of data collected, which in turn affects indicator value (Chaulagai et al 2005:375).

4.2.5 Effects of practices on quality of data

This section of the study assessed practices influencing the quality of data in the TB programme. It also includes the frequency of practices that influence the quality of data and how frequently data collection tools are used.

4.2.5.1   Describing data collectors' practices that influence the quality of data in Oshakati District TB programme

In this section of the questionnaire, various questions were asked that would assist in assessing the practices influencing the quality of data in the TB programme in Oshakati District. This involved answering 'yes' or 'no' to various statements; hence rating to

which degree the listed practice influenced the quality of data and how frequently the data collection tools were used in TB management.

4.2.5.2 Practices influencing the quality of data in Oshakati District

The study participants were asked to respond to statements regarding practices that influence the quality of data. The options presented to the respondents were 'yes', 'no' or 'not sure'.

4.2.5.2.1 Time taken to receive sputum results from the laboratory

With regards to the time taken to receive results from the lab, 82% (n=41) of respondents agreed with this statement. According to the nursing cadre, 93% (n=13) of the registered nurses agreed that the time taken to receive sputum results affects the quality of data; *p*-value 0.351. These results were not statistically significant as the *p*-value is higher than 0.05 in all cases.

According to the WHO, quality assurance programmes shows that the time it takes to receive sputum results influenced indicator value of treatment outcomes and correct categorisation of TB patients (WHO 2003[b]:3).

4.2.5.2.2 Number of supportive supervisions conducted by programme managers

In this regard, 58% (n=29) agreed that the number of supportive supervisions influenced the quality of data in the TB programme. According to years of work experience, 88% (n=7) of respondents with 1-3 years work experience agreed that supportive supervision conducted by programme managers influenced the quality of data; *p*-value 0.286. The department with the highest proportion of respondents who agreed that supportive supervision by programme managers influenced the quality of data was the medical ward (female, 86%; n=6); *p*-value 0.551. The results were not statistically significant as the *p*-value was higher than 0.05.

In Malawi conducting supportive supervision and an annual review, minimised wrong coding and incomplete fields in the HMIS (Chaulagai et al 2005:375).

4.2.5.3 Frequency of activities in Oshakati District

In this section, study participants were asked the frequency of activities thought to influence the quality of data collected in the TB programme in Oshakati District.

4.2.5.3.1 Supportive supervision from the regional level

Of all the respondents, 34% (n=17) stated that supportive supervision from the regional level is conducted sometimes, while 28% (n=14) of the respondents were not sure of the frequency of this activity.

According to the results, 80% (n=4) of the respondents attached to the TB department stated that supportive supervision from the regional level is undertaken sometimes; *p*-value 0.002 and *r*=0.296 (table 4.13). Results were statistically significant when compared according to departments, this indicates a positive association between the influence of supportive supervision at regional level and quality of data in the TB programme.

Table 4.13   Distribution related to supportive supervision from the regional level according to departments (N=50), 1 response missing

RESPONSE	DEPARTMENT						TOTAL
	TB CLINIC	TB WARD	HIV CLINIC	MEDICAL WARD (MALE)	MEDICAL WARD (FEMALE)	SPECIAL PROGRAM-MES/PHC	
NOT SURE	2	0	4	3	4	1	14
NOT DONE	3	0	0	0	0	0	3
SOMETIMES	2	4	1	2	3	5	17
FREQUENTLY	2	1	1	2	7	2	15
TOTAL	9	5	6	7	14	8	49

In Indonesia the health workers were provided regular feedback seemed not to have any improvement in administering data collection tools; this led to incomplete data (Mahendradhata et al 2008:396).

4.2.5.3.2 Auditing of TB data in the unit

Eighty percent (n=30) respondents stated that auditing of records is conducted frequently. Ninety two percent (n=11) of the respondents with work experience of 14 years and above state that auditing is conducted frequently; *p*-value 0.330. According to departments, 80% (n=4) of the respondents attached to the TB ward stated that this activity is conducted frequently; *p*-value 0.393. According to position in department, 91% (n=10) of enrolled nurses stated that auditing of TB data was conducted frequently; *p*-value zero point one three nine.

4.2.5.4 Use of TB data collection tools

This section describes how frequently the study participants used the nine TB records outlined in the TB guidelines. The most frequently used TB record was the TB treatment card, with 90% (n=45) of the respondents reporting to be using this record frequently. The least used TB record was the MDR side-effect form, with 40% (n=20). The results yielded were statistically significant with regards to the frequency of use of the DOT form when compared according to nursing cadre (*p*-value 0.017; *r*=0.004); this denoted a positive weak relationship (table 4.14). In addition, the results generated on the frequency of use of the MDR treatment card were statistically significant when compared according to nursing cadre (*p*=0.011, *r*=0.015) (table 4.15) and years of work experience: *p*-value 0.045 and *r*=0.137 *p*-value 0.045 and *r*=0.137 (table 4.16). In both cases the results denote a positive association.

Table 4.14 Distribution of responses related to frequency of use of DOT form according to nursing cadre (N=50), 1 response missing

RESPONSE	NURSING CADRE				TOTAL
	DEGREE IN NURSING	REGISTERED NURSE	ENROLLED NURSE	STUDENT NURSE	
NOT SURE	2	0	1	0	3
NOT DONE	0	2	2	1	5
SOMETIME	4	6	4	3	17
FREQUENTLY	0	6	5	13	24
TOTAL	**6**	**14**	**12**	**17**	**49**

Table 4.15 Distribution of responses related to frequency of use of MDR treatment card according to nursing cadre (N=50), 2 responses missing

RESPONSE	NURSING CADRE				TOTAL
	DEGREE IN NURSING	REGISTERED NURSE	ENROLLED NURSE	STUDENT NURSE	
NOT SURE	4	4	4	0	12
NOT USED	0	2	3	1	6
SOMETIMES	0	1	0	6	7
FREQUENTLY	2	7	4	10	23
TOTAL	6	14	11	17	48

Table 4.16 Distribution of responses related to frequency of use of MDR treatment card according to years of work experience (N=50), 2 responses missing

RESPONSE	YEARS OF WORK EXPERIENCE						TOTAL
	STUDENT	1–3 YEARS	4–6 YEARS	7–10 YEARS	11–13 YEARS	14 YEARS AND ABOVE	
NOT SURE	1	3	2	0	1	5	12
NOT USED	1	2	0	1	0	2	6
SOMETIME	6	1	0	0	0	0	7
FREQUENTLY	10	2	0	4	3	4	23
TOTAL	18	8	2	5	4	11	48

4.3   OTHER FACTORS INFLUENCING THE QUALITY OF DATA

The last section of the questionnaire contained an open-ended question which requested participants to identify other factors that influenced data quality at Oshakati State Hospital in relation to TB control programme. As shown in figure 4.7 the results revealed that 9 factors were reported by participants, of which the lack of resources and receiving training related to TB control and management had equal proportions of 66% (n=33).
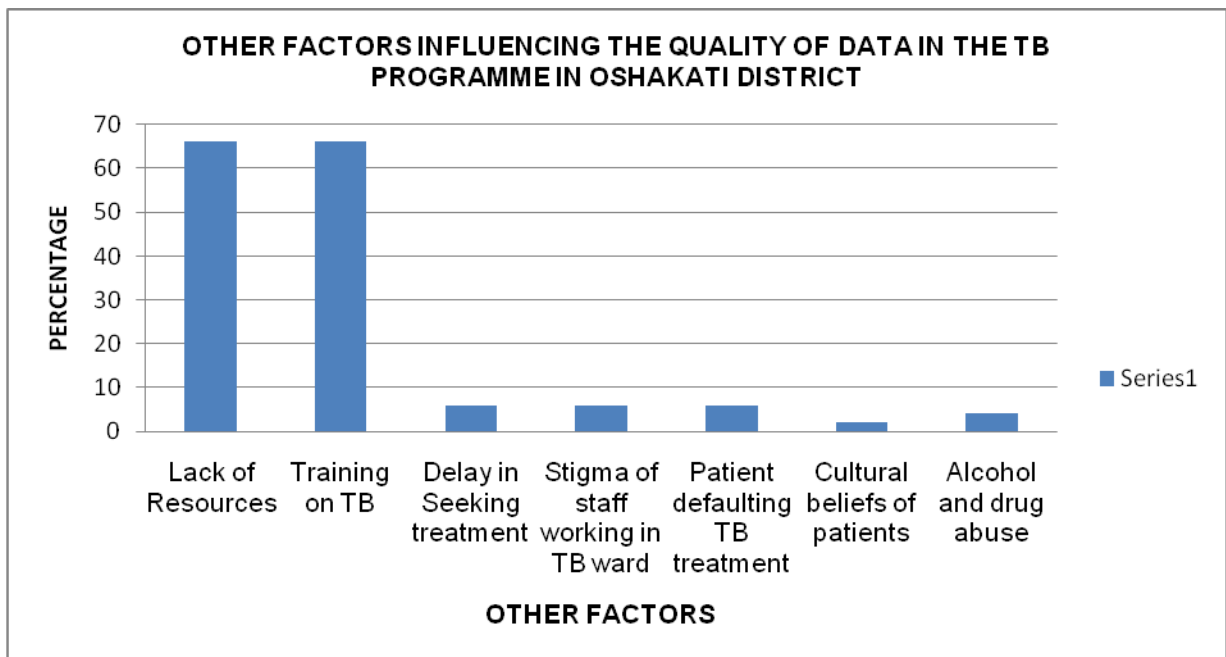
Figure 4.7   Other factors influencing the quality of data in Oshakati District (N=50), 1 response missing

Other factors that directly impacted on the quality of data for TB control programme as reported by participants included the following:

- Defaulting on TB treatment 6% (n=3)
- Delay in seeking TB care 5% (n=2.5)
- Cultural beliefs, values and practices 2% (n=1)
- Alcohol abuse in the community 4% (n=2)

4.4   CONCLUSION

This chapter presented the research findings about the factors that influenced the quality of data in TB control programme in Oshakati District, Namibia. It was evident from the gathered data that the factors such as the level of knowledge and attitudes of data collectors as well as the type of TB related training received, does influence the quality of data with regards to TB control programme.

The following chapter will discuss the conclusions drawn based on the findings of this study, limitations and recommendations of the study.

CHAPTER 5

Conclusions, recommendations and limitations of the study

5.1 INTRODUCTION

This chapter summarises the study, and draws conclusions based on the findings of this study. Study limitations are described and the recommendations based on the findings.

The aim of the study was to investigate factors influencing the quality of data for the TB control programme in Oshakati District, Namibia.

The researcher extensively consulted literature to gain insight into factors that influence the quality of data collected in TB programmes and other health programmes within the health system; this was both nationally and international.

The objectives of the study were to

- determine the demographic characteristics of nurses involved in TB control programme in Oshakati District, Namibia
- identify and describe the various factors influencing the quality of data in TB control programme in Oshakati District, Namibia
- measure the association between the demographic characteristics and factors influencing data quality in TB control programme in Oshakati District, Namibia

5.2 SUMMARY OF FINDINGS

Findings are discussed according to the three study objectives.

5.2.1 Determine the demographic characteristics of nurses involved in TB control programmme in Oshakati District, Namibia

The age group of 25 years and below recorded the highest representation of 44% (n=22) of the whole study group, with 77% (n=17) of this group representing student nurses. According to qualification the nurses who reported to have a degree in nursing were12% (n=6). The category with the highest representation according to years of work experience was amongst study participants with 1-3 years of work experience (36%, n=18) while the lowest representation was amongst study participants with 14 years and above work experience.

The study revealed that more than half (61.2%; n=31) of the total respondents had attended some form of TB - related training. However, comparing the data according to nursing cadre, years of experience, department to which attached and position in department, it was found that the distribution of training attended in these categories was not equal; it ranged from 28.6% (n=14) to 2% (n=1). Similar results were noted with regards to then nature of TB training attended with a 49% (n=15) attending the in-service training, while 2% (n=1) respondents attended trainer of trainer workshops.

5.2.2 Identify and describe the various factors influencing the quality of data in TB control programme in Oshakati District, Namibia

The results indicated that the majority (90%; n=45) of the respondents agreed that TB training improved correct recording and reporting. Sixty percent (n=30) of the respondents agreed that TB trainings influenced the rate of incomplete records in the unit, while 26% (n=13) of the respondents disagreed with this statement. This indicates that TB trainings influence the quality of data reported in the TB programme as it influences correct recording and completeness of data at operational level.

In relation to the attitudes related to usefulness of data collection tool the TB treatment card was rated as the most useful TB record in TB management, with 67% (n=33) of the total respondents ranking it thus. On the other hand, the MDR side-effects form was ranked as the least useful record with only 31% (n=14) of respondents ranking it as the most useful document.

This indicates that some records are not viewed as useful in TB control and management. The possible spill over effect on some TB indicators that rely on the information recorded. Nilmini, Jatinder and Sushi (2005:6) emphasise that data quality should not be compromised; this is because low quality health data will exert a major negative impact on the decision making process. It is also known to exert a tremendous spill over effect on patient management. The authors further emphasise the consequences: that errors or incomplete information contribute to loss of life and also embarrass an organisation (Nilmini et al 2005:6).

Seventy six percent (n=38) of the respondents agreed that the time between reviewing the patient and entering information into TB records influenced the quality of data. As stated in Baltazaar and Margunn (2004:18), where the practice of giving priority to reviewing patients influenced the quality of data collected in Mozambique.

Other factors that respondents identified to influence the quality of data in the TB programme in Oshakati District were lack of resources (66%; n=33).

5.2.3 Measure the association between the demographic characteristics and factors influencing data quality in TB control programme in Oshakati District, Namibia

The results were statistically significant with regards to knowledge level and use of TB records in TB management when compared according to position of participants in the department The mean score in this case was 4.49, a SD of 0.916 and a p-value of 0.05 (statistically significant at level 0.05). These results are in line with recommendations made in Norval et al (2007:517), which state that training in use of TB forms is essential before utilisation of the forms in TB management, since a lack of well-trained staff in this respect was identified.

The findings revealed a relationship between knowledge level and use of data collection tools, particularly the use of the TB treatment card in respect to nursing cadre, with a mean score of 6.18, a SD of 1.131. The results were statistically significant with a p-value of 0.05.

Responses from the study revealed a relationship between attitude and its influence on quality of data in relation to the number of training events attended by an individual. The data was statistically significant when compared according to years of work experience p=0.028 (statistically significant at 0.05 level). The results showed a reduction in the proportion of respondents who agreed with this statement in line with fewer years of work experience. The results contradict the study by Choudhry et al (2005:269), which found a decrease in performance with years in practice.

It was revealed that there was a relationship between attitudes towards the influence of TB training and rate of incomplete records in the unit. The results were significant when compared according to nursing cadre, p=0.0032 (statistically significant at 0.05). The results showed a decrease in the proportion of respondents who agreed that training influenced the rate of incomplete records in the unit. These results are in line with the experience reported in Chaulagai et al (2005:378), whereby attitudes towards the use of HMIS affected the completeness of data. This was linked more to the will and determination of staff to ensure the quality of data collected in the programme is maintained.

The findings revealed a strong relationship between responses related to the number of training events attended and influence on data quality in all categories where the results were compared. The p-values in all categories were as follows, according to nursing cadre (p=0.008), while according to years of work experience (p=0.032). According to department the (p=0.042). The strongest relation was according to position in department with the least (p=0.002). These results suggest a strong relationship between number of training events attended and their influence on the quality of data.

The results also revealed a relationship between the type of TB training attended and its influence on quality of data. When the data was compared according to the department to which respondents were attached, (p=0.003), indicating a statistically significant association. These findings concur with the findings of Chalugai et al (2005:375) and Bheekie et al (2006:262) that emphasise the importance of the cascade approach in TB training. This is believed to assist in an effective transfer of skills to fellow health workers through training and mentorship.

The findings related to the influence of the quality of data in the TB programme and its effect to decision making demonstrated a relationship between the attitudes of study participant on the use of data collected for decision-making. The results were statistically significant when compared according to nursing care, with a (p=0.028) and (p=0.0023) according to department. The strongest association was generated when the data was compared according to years of work experience (p=0.002).

The study revealed a strong relationship between the usefulness of the TB treatment card and nursing cadre (p=0.05). These results suggest that opinions related to the study participants' attitudes were related to the usefulness of TB records. The results were also statistically significant on the usefulness of the IPT record and department to which the person was attached to (p=0.045).

On the contrary a Malawian study revealed that systematic data verification and feedback improved the quality of data (Chaulagai et al 2005:375). However, the revealed a strong relationship between the frequency of supportive supervision from the regional level and the department to which a nurse was attached (p=0.002).

A strong relationship with regards to the frequency of the use of the MDR treatment card was indicated by the (p=0.045) according to years of work experience and (p=0.011) according to nursing cadre. The results also demonstrated a strong association between the frequencies of the use of the DOT system and the nursing cadre (p=0.017).

5.4   CONCLUSIONS

The findings of the study demonstrated that knowledge, attitudes and practise were factors influencing the quality of data reported in the TB Programme in Oshakati District as discussed.

Participants TB related training; the proportion of staff members who have received TB-related training and the nature of TB-related training attended influenced the quality of data. This influences the capacity building of staff in the district and skills transfer at departmental level. Participants' knowledge on TB control guidelines, in particular the

use of TB records to, used to capture the core TB indicators influenced the quality of data in the programme. The attitudes and practises of respondents affected implementation of TB guidelines hence, influencing the quality of data in the programme.

This was in relation to completing TB records, frequency of use of TB records and the participants' attitudes towards the use of the TB records for decision-making. Lastly frequency of supervision was also shown to influence the quality of data in the TB programme. The above factors, identified by the study, contribute towards improving the quality of data in the TB programme in Oshakati District. As a result, this decreases transmission rates and the TB disease burden in Oshakati District.

5.5   RECOMMENDATIONS

5.5.1 Recommendations for further studies

- A comparative study to be conducted targeting nurses in the district to assess the impact of training conducted to determine if the training has been put into practices. This should also incorporate a comparison of data collection in private and public institutions in the region.

- A comparative study should be done targeting the collection of data in the special programmes, particularly the HIV/AIDS Programme, to compare the data collection of the TB programme and these programmes and the impact on improvement of health in the region.

- In-depth studies should be conducted to assess the effect of the flow of information between the lab and health workers and its effect on TB management.

- Conducting a qualitative research will assist identify in-depth factors that influence knowledge level, attitudes and use of data collection tools and components that influence the quality of data.

5.5.2 Recommendations for practise

Based on the findings and suggestions from the study participants, the following recommendations can be made for improving the quality of data in the TB programme in Oshakati District.

- To adopt the cascade approach of training both during in-service training and in training of registered nurses as they are expected to be able to mentor student nurses after qualifying as a registered nurse. This will contribute towards continuous training and transfer of skills at departmental level. This will, in turn, improve monitoring and evaluation at all levels. Further, it will assist in strengthening the recording and reporting of TB activities and assessment of the impact of TB control activities in the district. Increasing the number of trainers of trainers in each department will further assist in developing a training schedule that will not need external resources as well as implementing training that is tailor-made to suit the needs of the department.

- To advocate capacity building of all cadres of staff in the district with respect to TB programme data in order to enhance data collection – to include the use of the ETR, maintenance and data analysis. This will improve their practices and attitude towards the TB programme, thus positively affecting the collection of data on TB treatment and monitoring of TB patients in Oshakati District.

- To improve the positive attitude towards quality data in the TB programme by involving all staff in reviewing TB records in each department in Oshakati District. This will assist in creating awareness regarding the importance and usefulness of the data collected and the effect of its quality in TB control in the district.

- To promote practices that improve the quality of data in the TB programme in Oshakati District, conducting frequent audits and review meetings that will involve both clinicians and laboratory technologists; this will assist in the correct use of TB records and promote practices that improve the quality of data collected.

- To increase coverage of automated collection of data in the TB programme. This will improve the timely collection of data and analysis. It will also enhance the follow up of TB patients. This will render it easier and faster to share TB data and

information with other regions in Namibia, thus improving the treatment of TB in the region and the country as a whole.

The above recommendations will be implemented through creating awareness and advocating for changes by sharing the research report with the relevant stakeholders. This include engagement with the National TB and Leprosy Programme, University of Namibia school of nursing, department of nursing services, department of training in the MoHSS. This will be during the quarterly TB review meetings held at regional and national level, presentation of abstracts for at conferences sponsored by the MoHSS annually and publication of the report in daily newspapers and other public health journals.

5.6   LIMITATIONS OF THE STUDY

The study was conducted at Oshakati State Hospital and is context-specific using a small sample. This may affect the generalisability of the findings to other similar settings. The results will only be relevant to Oshakati District.

Another limitation is that the study involved nurses only and did not include other health professionals who are also involved in collecting data relating to TB control and who also may be influencing the quality of data in Oshakati District.

5.7   CONCLUDING REMARKS

It is hoped that the findings in this study will contribute towards improving recording and reporting practices in the given TB programme. This should, in turn, assist in improving the quality of data generated in the TB programme, which in turn should enhance TB management and the effective implementation of TB control activities in Oshakati District, Namibia.

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ANNEXURE 1: LETTER OF PERMISSION TO CONDUCT THE STUDY

Linda Vugutsa Kagasi
PO Box 23079
Windhoek, Namibia

28th May 2009

The Permanent Secretary
Ministry of Health and Social Services
Windhoek, Namibia

Attention: The Regional Director, Oshana Region
               Ministry of Health and Social Services

Dear Sir

REQUEST FOR PERMISSION TO CONDUCT A RESEARCH PROJECT AT OSHAKATI STATE HOSPITAL

I am humbly requesting permission to conduct research in your region, **Oshakati District,** particularly **the Oshakati State Hospital.**

I am a student with the University of South Africa pursuing my post-graduate studies in Public Health. I am interested in health systems strengthening, with focus on improving organisations' Monitoring and Evaluation systems. My research topic is**: "An Assessment of Factors Influencing the Quality of Data for the TB Management Programme in Oshakati District, Namibia".**

This study will assess factors influencing quality of the data collected in the TB programme in Oshakati District, focusing on nursing staff. The research will use a questionnaire to collect the information, which will ensure confidentiality is maintained. There will be no manipulation of study participants and also consent will be sought from all the relevant authorities at regional and district level.

The information collected will be sent to UNISA for examination purposes and the final marked report will also be handed to the Oshakati District Management.

Kindly assist me with information and possible communication with the relevant Ministry officials in Oshana Region. You may contact me on the following number for further clarification and communication: 0814014656 or email: vugutsakagasi@gmail.com

Your positive response and support is highly appreciated.

Thank you
Yours sincerely

LINDA VUGUTSA KAGASI

ANNEXURE 2: **CLEARANCE CERTIFICATE FROM THE RESEARCH AND ETHICS COMMITTEE, DEPARTMENT OF HEALTH STUDIES, UNISA**

UNIVERSITY OF SOUTH AFRICA
Health Studies Research & Ethics Committee
(HSREC)
College of Human Sciences

CLEARANCE CERTIFICATE

Date of meeting: 13 September 2009   Project No: 3732-496-9

Project Title: **Factors contributing to the incidence of tuberculosis in Nankudu District, Namibia**

Researcher: **Kgasi LK**

Supervisor/Promoter: **Prof ON Makhubela- Nkondo**

Joint Supervisor/Joint Promoter: **Prof LI Zungu**

Department: **Health Studies**

Degree: **MA Cur**

DECISION OF COMMITTEE
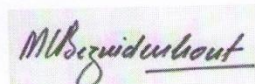
Approved [√]   **Conditionally Approved** [ ]

Date: 13 September 2009

Prof VJ EHLERS
RESEARCH COORDINATOR: DEPARTMENT OF HEALTH STUDIES

Prof MC Bezuidenhout
ACADEMIC CHAIRPERSON: DEPARTMENT OF HEALTH STUDIES

PLEASE QUOTE THE PROJECT NUMBER IN ALL ENQUIRES

ANNEXURE 3: CLEARANCE LETTER FROM MoHSS, NAMIBIA

REPUBLIC OF NAMIBIA

Ministry of Health and Social Services

Private Bag 13198	Ministerial Building	Tel: (061) 2032562
Windhoek	Harvey Street	Fax: (061) 272286
Namibia	Windhoek	E-mail: hilmanangombe@yahoo.com
Enquiries: Ms. H. Nangombe Ref.: 17/3/3/AP		Date: 13 October 2009

OFFICE OF THE PERMANENT SECRETARY

Ms. Linda Vugutsa Kagasi
P. O. Box 2088
Oshakati
Namibia

Dear Ms. Kagasi,

Re: An assessment of factors influencing data quality in the TB programme: Focus on Oshakati District.

1.   Reference is made to your application to conduct the above-mentioned study.

2.   The proposal has been evaluated and found to have merit.

3.   Kindly be informed that approval has been granted under the following conditions:

3.1   The data collected is only to be used for academic purpose;
3.2   A quarterly progress report is to be submitted to the Ministry's Research Unit;
3.3   Preliminary findings are to be submitted to the Ministry before the final report;
3.4   Final report to be submitted upon completion of the study;
3.5   Separate permission to be sought from the Ministry for the publication of the findings.

Yours sincerely,

MR. K. KAHUURE
PERMANENT SECRETARY

"Health for All"

ANNEXURE 4: INFORMATION SHEET

Dear Participant

Thank you for your willingness to hear about this study. I am a student at the University of South Africa. I am conducting a research study in Oshakati District in which you are a potential participant. This is a requirement for the Masters Degree in Public Health which I am busy completing.

Title of the research

An assessment of factors influencing the quality of data for the TB control programme in Oshakati District, Namibia.

Purpose of the study

The study aims to identify components related to knowledge and attitudes influencing the quality of data in the TB programme. It will also describe the practices identified in the literature review which have been found to influence the quality of data in the monitoring and evaluation in the TB programme in Oshakati District. This will assist to identify gaps and weaknesses that affect data collection at the operational level, thus contributing in programme planning and development of suitable Monitoring and Evaluation data collection tools.

What is your involvement?

You will be asked to answer questions that will include your general information such as gender, nursing cadre, age, years of experience as a nurse, department to which attached, and current position in the department. You will also be asked questions related to your knowledge and training with regards to TB, attitudes related to components that influence the quality of data and finally, you will be asked to describe practices that are thought to influence the quality of data in the TB programme in your current department. The whole interview will take 20 to 30 minutes of your time.

How will you benefit from the study?

You will benefit from this study by providing essential information that will help in introducing appropriate intervention to improve the Monitoring and Evaluation of the programme and identify gaps that will result in early interventions to be put in place; this in turn will improve the TB control activities not only in your district but also in the country.

Any risk involved?

Some questions may make you feel as though you are undergoing a performance review.

Confidentiality

Your name will be kept confidential at all times. I will keep all records of your participation, including a signed consent form which I will need from you, should you agree to participate in this study, locked at all times and destroy them when the research is completed.

Can you withdraw from the study?

Your participation is totally voluntary. If you choose not to participate, to withdraw, or not to answer a specific question, you can do that without providing any reason.

Informed consent

What follows now is an informed consent to participate in this study, before I proceed with the interview. You will be able to review the consent form and then decide to or not to participate.

Further questions

Should you have further questions or wish to know more, I can be contacted through the following details:

Student Name: Linda Vugutsa Kagasi

Student Number: 37324969

Mobile phone: 0814014656

E-mail: vukaggz@yahoo.com

Telephone at work: 065-230525

Fax number: 065-230545

I am accountable to Prof. Lindiwe Zungu, my supervisor at the University of South Africa. Her contact details are +2712 429 6588 (office), Department of Health Studies: e-mail: zunguli@unisa.ac.za

ANNEXURE 5: RESEARCH BUDGET

	ITEM DESCRIPTION	COST PER UNIT (RANDS)	QUANTITY REQUIRED	AMOUNT (RANDS)
1	Stationery			800
2	Travelling Expenses	.97 per litre	220	800
3	Printing	200 paper copies	800	6,000
4	Photocopying	50 cents per page	1000	1,000
5	Binding	30	4	120
7	Miscellaneous Expenses			2000
	TOTAL			**10720**

ANNEXURE 6: CONSENT FORM FOR RESPONDENTS

Title of Research Project:

AN ASSESSMENT OF FACTORS INFLUENCING THE QUALITY OF DATA FOR THE TB MANAGEMENT PROGRAMME IN OSHAKATI DISTRICT, NAMIBIA

An assessment of factors influencing the quality of data for the TB management programme in Oshakati District, Namibia.

This study has been described to me in detail and I clearly understand my role in this study. I freely and voluntarily agree to participate. I understand that my identity will not be disclosed and the consent I am going to give will be kept confidential. I may choose to withdraw or not answer specific questions in this study without giving a reason at any time and this will not negatively affect me in any way.

*Participant's Name*_____   *Date*_____

*Participant's Signature*_____   *Date*_____

*Interviewer's Name*_____   *Date*_____

*Interviewer's Signature*_____   *Date*_____

ANNEXURE 7: MAP OF NAMIBIA SHOWING OSHAKATI DISTRICT

Source: www.mapsofworld.com

ANNEXURE 8: **TIMELINE FOR ALL ACTIVITIES OF THE STUDY (2009-2010)**

ACTIVITY	TIME FRAME
Research Proposal is Approved	1st October – 15th October (2009)
Permission Obtained from the MoHSS to Conduct the Study	16th October -25th October
Testing of the Questionnaire and Revision	26th October - 1st November
Data Collection	5th November - 30th November
Code and Prepare for Analysis	1st December -31st December
Data Analysed	1st January -28th February (2010)
Prepare Report	1st February -15th June
Report Handed to UNISA	31st July –30th Ocotoberst
Report Revised and Finalised	30th Octoberl-30th November
Final Report Approved and Prepared to be Archived	1st January- 30th March 2011
Final Report Shared By the MoHSS Oshakati District	1st May 2011

ANNEXURE 9: NURSING PRACTITIONER'S QUESTIONNAIRE

Year of study	Y	Y	Y	y				
Interview date	D	D	M	M	Y	y	Y	Y
Respondent number								

PART A GENERAL INFORMATION

1. What is your gender?

01	Male	
02	Female	

2. What is your highest nursing rank?

01	Enrolled Nurse	
02	Registered Nurse	
03	Student Nurse	

3. In which age bracket to you fall under?

01	Less than 25 years	
02	26 – 35 years	
03	36 – 45 years	
04	46 – 55 years	
05	55-60 years	
06	60 years and above	

4. What are your years of experience as a nurse?

01	Student (indicate your year of study)	
02	1 – 3 years	
03	4 – 6 years	
04	7 – 10 years	
05	11 – 13 years	
06	14 years and above	

5. Which department are you currently attached to?

01	TB Clinic	
02	TB Ward	
03	HIV Clinic	
04	Medical Ward (male)	
05	Medical Ward (female)	
06	Administration	
06	Special Programmes	

6. What is your current position in your department?

01-	Nurse Manager	
02-	Special Programmes Nurse	
03-	Registered Nurse	
04-	Enrolled Nurse	
05-	Student Nurse	

SECTION B: KNOWLEDGE, ATTITUDES AND PRACTICES: FACTORS RELATED TO QUALITY OF DATA

B.1 KNOWLEDGE

1. Have you ever attended a TB workshop, training or meeting?

01-	Yes	
02-	No	
03-	Not sure	

2. With regards to TB, when was the last time you attended a TB related workshop, training or meeting?

01	Less than 3 months ago	
02	3-6 months ago	
03	6 months- 1 year ago	
04	1-2 years ago	
05	Over 2 years ago	
06	Never attended one	
07	Not sure	

3. Which type of TB workshop, training or meeting have you attended?

01	In-service TB training	
02	Trainer of trainer	
03	TB review meetings	
04	National TB meetings	
05	International TB meetings or conferences	
06	Not applicable	

4. Rate your knowledge level in the following components using the following key to guide you

        VH- Very High (5)

        H- High   (4)

        M- Moderate   (3)

        L- Low   (2)

        VL- Very Low   (1)

	VH 5	H 4	M 3	L 2	VL 1
Dimensions of data quality					
Filling in the TB records					
The use of the TB records in TB management					
Assessing the quality of data collected					
Skills in analysing data collected					
Entering information into the ETR					

5. Rank the following TB data collection tools according to the one where you understand its use and how to fill it in. Score them from 1 to 7 with 7 being the highest score.

        ☐ TB register
        ☐ TB patient treatment card
        ☐ TB patient identity card
        ☐ DOT form
        ☐Patient referral form
        ☐ MDR treatment card
        ☐ MDR side-effect treatment form
        ☐ Isoniazid Prevention Therapy registers
        ☐ Cough register

B.2 ATTITUDES

1. Indicate the most appropriate option highlighted in bold

	Yes 1	No 2	Not sure 3
TB training events conducted improve understanding of correct recording and reporting			
Number of training events, workshops and meetings attended by an individual staff improves data quality in the unit			
Type of TB training attended contributes to improvement of data quality			
TB training events influence the rate of incomplete records in the unit			

2. For each item, which is the code that best represents the extent to which you believe it influences the quality of data in the TB programme? The following key will guide you:

SA – Strongly Agree (5)
A – Agree (4)
SD – Strongly Disagree (3)
D – Disagree (2)
NS – Not Sure (1)

Item	SA 5	A 4	SD 3	D 2	NS 1
Number of training events attended					
Type of TB training attended					
Frequency of supervision					
Number of staff trained in a unit on data collection influences the quality of data collected					
Number of forms to be filled in for each patient					
Relevance of data to daily work in the unit					
Data collected assists in decision making					
Data collected eases workload					
Data collected improves patient management					
All the forms are useful in TB management					
Trust the findings received from the lab					
Data quality assists in timely diagnosis of the patient					
Data collected is used by decision makers					

3. Rank the following TB data collection tools according to the one you believe is useful in managing the TB programme in Oshakati District. Score them from 1 to 7 with 7 being the highest score.

       ☐ TB register
       ☐ TB patient treatment card
       ☐ TB patient identity card
       ☐ DOT form
       ☐Patient referral form
       ☐ MDR treatment card
       ☐ MDR side- effect treatment form
       ☐ Isoniazid Prevention Therapy registers
       ☐ Cough register

B.3 PRACTICES

1. Which practices influence the quality of data in the TB programme in Oshakati State Hospital?

Practice	Yes 1	No 2	Not sure 3
Time between reviewing patient and entering information into the TB records			
Time taken to receive sputum results from the lab			
Referring to the TB guidelines before conducting any activity			
Number of supportive supervisions conducted by Programme Managers			
Frequency of auditing the TB records			
The number of incomplete records			

2. How would you rate the frequency of the following activities? Use the guide below to indicate the option that best suits you.

F – Frequently (4)
S – Sometimes (3)
ND - Not Done (2)
NU- Not Used (2) *only applicable to question 3 in this section*
NS - Not Sure (1)

Activity	F 4	S 3	ND 2	NS 1
Supportive supervision from the district level				
Supportive supervision from the regional level				
Supportive supervision from the national level				
Referring to the TB guidelines before conducting any activity				
Feedback from TB zonal review meetings and district review meetings				
Feedback from staff who attend workshops, trainings or TB meetings				
Auditing of TB data in the unit				
Use of TB records to determine supplies to be ordered				
Use of data collected for decision making				

3. Rate the use of the following TB records in TB management

Records	F 4	S 3	NU 2	NS 1
TB registers				
TB patient treatment card				
TB identity cards				
DOT forms				
Patient referral form				
MDR treatment card				
MDR side-effect treatment form				
Isoniazid Prevention Therapy register				
Cough register				

4. What other factors do you think influence the quality of data in the TB programme at Oshakati District? Please describe them in the space provided below:

_____

_____

_____

_____

_____

_____

_____

_____