

THE UNIVERSITY OF ZAMBIA
SCHOOL OF MEDICINE

DEPARTMENT OF COMMUNITY MEDICINE

**AN INVESTIGATION OF INJECTION
PRACTICES IN SELECTED HEALTH
CENTRES OF LUSAKA AND KAFUE
DISTRICTS**

By

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A dissertation submitted to the University of Zambia in partial fulfillment of the requirements for the award of the degree of Master of Public Health (MPH)

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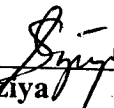
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DEDICATION

To my wife Monica Zulu Mwape and my children, Prudence (Chongo), Kennedy and Junior for many sacrifices they made during my studies and for their unfailing encouragement and support throughout my period of study.

ACKNOWLEDGEMENTS

I would like to express my gratitude to a number of people and institutions who, in different but important ways, contributed to the successful completion of this study. These include **Professor K.S Baboo**, Coordinator of the MPH programme in the Department of Community Medicine, for his valuable assistance and guidance in this study; my sponsors Defence Forces Medical Services for funding my entire study; **Dr. S. Siziya** for his guidance especially in the findings of the study; **Sylvia** and **Clement** of the University of London College of Medicine Project in collaboration with School of Medicine of the University of Zambia at UTH for their guidance and assistance in the statistical analysis of this study; the Director-General, Central Board of Health and the respective District Health Management Boards of Lusaka and Kafue for giving me permission to conduct my study; my research assistants, **Peter Mwale** and **Jones Mpundu** for their dedication during data collection. Others are **Dr. L. Chiwele**, Head of Department of Community Medicine, University of Zambia, School of Medicine; Lecturers **Dr. C. Michelo** and the late **Aaron Mwale** (MHSRIP) and **Warrant Officer Sajisa** of Maina Soko Military Hospital for data entry and cleaning the data and for **Mrs. Wendy Muchenya Sikatali** for typing my final report.

Lastly I would like to thank all the respondents who willingly sacrificed their time to fill in the questionnaires as well as the mothers who took part in the focus group discussions. It is my sincere hope that the answers and comments they provided will contribute positively to making safe the injections that our children receive in the immunization activities as well as prevent them from contracting devastating diseases such as HIV/AIDS. To all the above and those I may have skipped, I say thank you very much.

ABSTRACT

This study investigated the safety of injection practices in immunization activities and factors that contribute to unsafe practices. The study was done by finding out the type of injection equipment available in the MCH department and immunization activities in particular, the knowledge that nurses have of the use of the injection equipment as well as their knowledge of the critical use and disposal procedures.

Data was collected both quantitatively and qualitatively by administering a standardized pre-tested questionnaire to each of the 84 nurses. In addition focus group discussions were conducted with 40 mothers of children brought for immunizations. A checklist was also used in participatory observation of immunization activities in process. Specific method of data collection consisted of a cross sectional survey of 84 nurses working in MCH departments and involved in immunization activities in their respective health centres. The nurses were selected by systematic random selection as well as the 40 mothers who were involved in the focus group discussions. The mothers were included in the study to establish their knowledge of what constitutes unsafe injection practices.

The findings show that injection equipment was inadequate in the respective MCH departments and in particular immunization activities. This was especially so in the health centres which did not have a budget and supply policy since 78% of the respondents whose health centres did not have a budget and supply policy reported not having adequate stock of injection equipment. A test of statistical significance confirms this association ($P = 0.019$).

The study however revealed that there was no association between adequacy of injection equipment and the number of times it was recycled through sterilization ($P=0.705$). The result suggests that nurses were accustomed to recycling injection equipment regardless of it being abundantly in stock or out of stock. This may be so because they were used to this practice since the equipment is most of the times out of stock. No association was observed between supervisory visits and the number of times the equipment was recycled ($P = 0.085$). This result suggests the practice had become traditional because nurses have become accustomed to the culture of inadequate supplies of disposable injection equipment. This implies that there is need to improve the supply of disposable injection equipment most especially autodestruct syringe needle, in immunization activities in order to improve the safety of injection practices and hence reduce the risks to children acquiring iatrogenic infections such as HIV/AIDS as well as injection abscesses from over recycled needles.

The interventions should therefore include ensuring adequate supplies of disposable injection equipment to MCH departments of health centres which should comprise of autodestruct syringe needles coupled with strict enforcement of the critical use and disposal procedures through enhanced supervision.

LIST OF ABBREVIATIONS

CBoH	-	Central Board of Health
USAID	-	United States Agency for International Development
MoH	-	Ministry of Health
IDU	-	Intravenous Drug User
DHMT	-	District Health Management Team
AIDS	-	Acquired Immune Deficiency Syndrome
FGD	-	Focus Group Discussion
HIV	-	Human Immune Deficiency Virus
MCH	-	Maternal and Child Health
UNICEF	-	United Nations Children Emergency Fund
WHO	-	World Health Organisation
LDHMB	-	Lusaka District Health Management Board
KDHMB	-	Kafue District Health Management Board
EPI	-	Expanded Programme of Immunization

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CHAPTER ONE

1.0 INTRODUCTION

Zambia has adopted the goal of universal childhood immunization (UCI). The goal of UCI in Zambia is to reduce morbidity and mortality from vaccine preventable diseases such as tuberculosis, measles, poliomyelitis, diphtheria, pertussis (whooping cough) and tetanus, doing no harm in the process by correctly and safely administering the vaccines.

Injections must be given safely. This is especially important for immunization services, which invite a healthy client to undergo a procedure involving a degree of risk.

Zambia's immunization services have adopted a safe injection policy whose objective is to correctly and safely administer injections to children. The policy emphasizes the need for all immunization injections to be administered in such a way that it does not harm the recipient as well as the giver.

The principle of one needle and one syringe for each dose per vaccine per child is necessary to avoid abscesses at the injection site and the spread of infectious diseases such as HIV/AIDS and hepatitis B (CBoH, 2000).

The expanded programme of immunization (EPI) standing policy state that a single sterile needle and a single sterile syringe should be used with each injection.

In Brazil shared needles among intravenous drug users (IVD) resulted in 69% acquiring hepatitis C virus associated with needle sharing (Oliveira et al, 1999).

According to Telles (1997) on HIV sero-prevalence and risk behaviour among injecting drug users, two populations in which needle sharing was the practice the study revealed that a lower sero- prevalence levels for HIV and hepatitis were reported where preventive strategies were employed by provision of adequate sterile injection equipment.

With the advent of HIV/AIDS the risk of acquiring this deadly disease through shared needles has become a great source of concern to health care planners as it is by no means confined to the so called “risk groups”: Homosexual, injecting drug users, and prostitute women (Burke and Madan, 1997).

The economic and social factors in our country are such that there is a scarcity of adequate injection equipment in our health centres hence forcing health care workers to resort to unorthodox practices of asking mothers to bring their won needles for immunization of their children (Orabaton, 2000).

Preliminary results from a survey in some rural health centres of Luapula Province suggest that the practice of needle sharing exists and hence exposes children to the risks of acquiring Iatrogenic infections such as HIV/AIDS and hepatitis (Orabaton, 2000). The survey also reported an estimated high number of shared needle events at different levels of medical care in Luapula Province.

Because of the prevailing poor socioeconomic climate in the country, this practice of needle sharing may portray the real situation in immunization activities in most Zambian health centres. According to Meers, et al (1980), it

is reported that most countries are unaware of the incidence of unsterile medical practices in their hospitals.

1.1 STATEMENT OF THE PROBLEM

Unsafe injections have been known to contribute to the transmission of diseases such as HIV and hepatitis inspite of the advance in injection equipment technology and better understanding of the risks of cross infection.

The problem is potentially greatest in developing countries such as Zambia. Every year the expanded programme of immunization administers over 550 million injections in developing countries (WHO and UNICEF, 1996). Even if this number comprises only a fraction of all injections given, safety must be a leading concern.

The spread of HIV has highlighted the need to ensure that individuals are only exposed to those injections which are necessarily safe. Injections for immunizations are necessary, they must be safe. Incorrect immunization practices continue to occur despite the Expanded Programme of Immunization (EPI) standing policy that “a single sterile needle and a single sterile syringe” should be used with each injection.

Revelations of unsafe injection practices in some health facilities in Luapula Province by Orabaton, 2000 is a very big cause for concern especially that mothers are made to bring their own injection needles for immunization of their children in the current adverse socioeconomic conditions obtaining in most households. Some mothers have therefore been unable to purchase

needles and have thus resorted to borrowing used needles from other mothers for the immunization of their children.

Health workers in these health facilities are reported to be perpetrating these unsafe injection practices which can result in transmission of infectious as well as non- infectious complications.

EFFECTS OF UNSAFE INJECTION PRACTICES

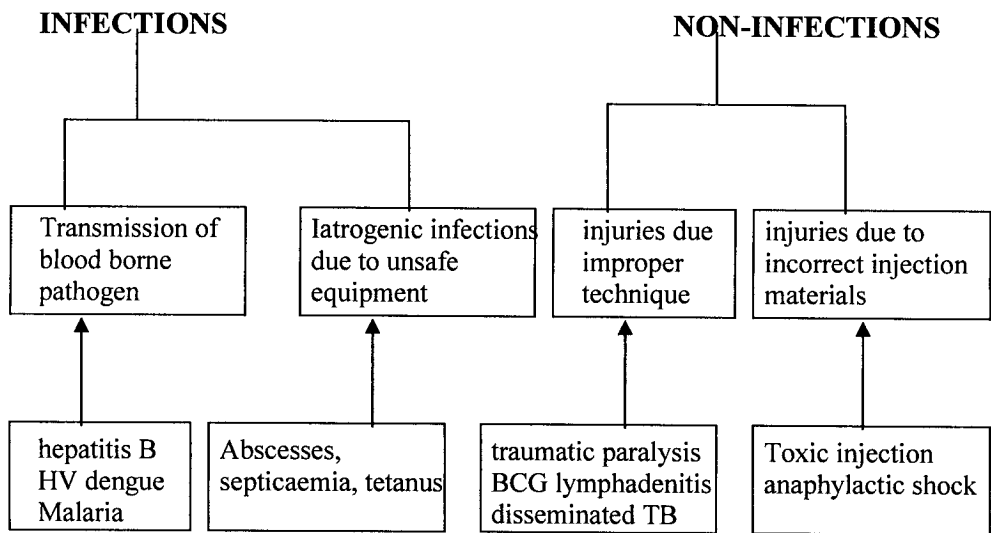
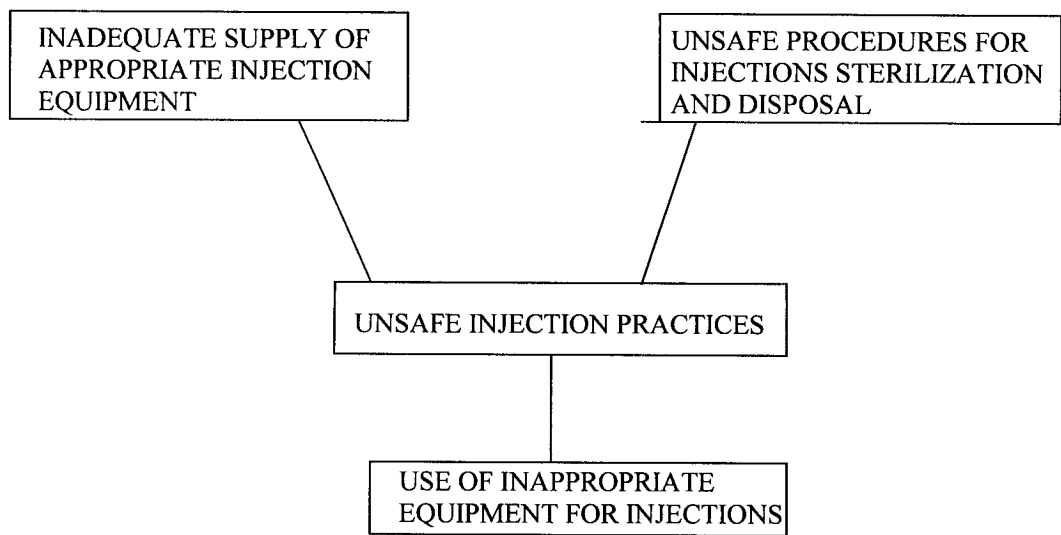


Figure 1: PROBLEM ANALYSIS



Infectious complications probably account for the majority of unsafe injection associated risks of transmission of blood borne diseases.

The reasons for the unsafe injection practices in the reported centres is unknown, although this could be due to many factors such as incorrect sterilisation, and disposal

practices, inadequate supply of appropriate injection equipment and the use of inappropriate equipment for injections.

1.2 STUDY OBJECTIVES

General Objectives

The general objectives of the study are:

- (i) To determine if nurses working in immunization activities are conversant with appropriate injection equipment
- (ii) To establish the nurses' knowledge of the recommended procedures for critical use and disposal.
- (iii) To assess the mothers knowledge and awareness of safe injection practices.

Specific Objectives

The specific objectives of the study are:

- (i) to find out the type of injection equipment available in the immunization activities of these health centres
- (ii) to determine adequacy of injection equipment in the health centres
- (iii) To assess the nurses compliance with the critical use and disposal procedures.
- (iv) To establish if needle sharing exists among the mothers.
- (v) To establish if there is supervision of immunization activities.
- (vi) To ascertain compliance to recommended injection procedures.

1.3 LITERATURE REVIEW

The WHO has been warning governments and donor agencies on vaccine safety and unsafe injection practices and especially that the re-use of standard disposable syringes and needles places the general public at high risk of disease and death (WHO and UNICEF, 1994).

Patients, health care workers and the general public are at risk of contracting infectious diseases through unsafe injection practices. Blood borne diseases may be transmitted from patient to patient, and from patient to health care workers and patient to the general public (WHO and UNICEF, 1994).

The problem is potentially greatest in developing countries such as Zambia as more injections are given and the prevalence of blood borne diseases is high. The expanded programme of immunization administers over 550 million injections in developing countries hence safety of these injections must be a leading concern (WHO and UNICEF, 1996).

In Brazil, Oliveira et al (1999) in a study among 102 injecting drug users who shared needles, reported that 69% were found to have acquired hepatitis C virus associated with needle sharing.

A comparative study was carried out by Telles, (1997) on HIV sero prevalence and risk behaviour among two populations of injecting drug users in which needle sharing was the practice. In one population prompt prevention strategies were employed by provision of adequate sterile injection equipment whilst in the other populations no preventive strategies were employed. The study reveals a lower sero prevalence rate in population where preventive

strategies were employed. The lower sero prevalence levels for HIV argues for the fundamental importance of effective preventive strategies in the prevention of the spread of blood borne infections arising from needle sharing.

According to Meers et al (1980) it is reported that most countries are unaware of the incidence of the extent of unsafe injection practices in their health facilities, however studies are increasingly reporting high incidences of cross infections resulting from such practices.

In his investigation of the safety of injection practices in health centres of Luapula Province Orabaton (2000) reported the use of unsterile needles for immunization purposes repeatedly by health care workers as well as the practice of needle sharing by mothers for immunization of their children. Orabaton estimated a high number of shared needle events in the Mansa General Hospital Paediatric ward as well as at health centres.

With such unsafe injection practices especially in immunization activities, many children are at risk of contracting diseases such as HIV/AIDS and hepatitis and hence more likely to die from them.

WHO and UNICEF (1996) reports that systematic supervision and periodic evaluation of injection practices are vital to ensure safety. Also supervisory visits at least twice each year using a checklist, which includes a review of injection safety to improve performance. Such checks include injection equipment and is critical to the safety of immunizations.

WHO and UNICEF, (1994) Expanded Programme on immunization defines a safe injection as one that does no harm to the recipient, does not expose the health workers to avoidable risks of HIV/AIDS and hepatitis B infection, and does not result in waste that puts others at risk of disease.

The CBoH, (2000) vaccination manual for the Expanded Programme of immunization in Zambia states that immunization injections should be administered using equipment sterilised under pressure in steam sterilizers. The manual also states that if sterile injection equipment is not available (e.g if sterilization equipment is not reaching the required standards or there is no sterile equipment in stock) then immunization should not be given. Sterilizable needles and syringes are to be replaced as soon as they reach the end of their useful life, and must be disposed of safely.

The manual further states that disposable injection equipment (conventional disposable or auto destruct solo shot devices) may only be used where proper disposal facilities are available.

According to the manual, single use syringes and needles are appropriate for all types of immunization strategies, including use in fixed clinics and in outreach and special campaigns. A sterile packed syringe and a sterile packed needle must be used for each injection and they must be destroyed immediately after use.

Daniel, (1994) states that standard disposable syringes and needles can be used for immunization only in settings where it is guaranteed that they will be destroyed after a single use, as verified by monitoring of consumption and

supervision of disposal. Their reuse places the general public at high risk of disease and death.

Auto destruct syringes are designed so that it is impossible to use them more than once. Consequently they present the lowest risk of person-to-person transmission of blood borne pathogens. They are the preferred type of disposable equipment for administering vaccines, particularly in mass immunization programmes.

Single – use syringes and needles should be used only where they can be safely disposed of after use.

According to Battersby, (1996) sterilizable syringes can be used in routine immunization sessions where compliance with cleaning and sterilization procedures between each use can be assured.

A sterile syringe and a sterile needle must be used for each injection. Sterilizable syringes and needles must be sterilized before they are first used and after every subsequent use (WHO and UNICEF, 1996).

This does not however reflect the real situation in immunization activities where such equipment is usually lacking thus forcing health care workers to resort to unsafe injection practices such as non-compliance with cleaning and sterilization procedures as well as asking mothers to bring own needles for vaccination of their children.

Orabaton's (2000) preliminary investigation of the safety of injection practices reveals that because of economic hardships in households, mothers are unable

to purchase needles and therefore may resort to needle sharing among themselves for the immunization of their children. According to Orabaton, these unsafe injection practices could be rife in most health facilities in Zambia, especially considering that no study has ever been carried out to establish the safety of injection practices.

CHAPTER TWO

2.0 METHODOLOGY

2.1 RESEARCH DESIGN AND STUDY TYPE

This was a cross sectional descriptive study. It was chosen in order to provide useful insight to the situation. The method was appropriate because the study sought to quantify the distribution of certain variables about health workers knowledge and attitudes as well as their practices of injection safety in immunization activities particularly their compliance to the recommended procedures related to injection safety. The method was also chosen because of its capacity to solicit opinions from mothers as well as assessing their knowledge on injection safety.

2.2 VARIABLES

The independent variables included inadequate supply of appropriate injection equipment, unsafe procedures for injection equipment sterilization and disposal as well as the use of inappropriate equipment for injections.

2.3 STUDY SETTING

The study was carried out at four health centres in Lusaka and Kafue districts of Zambia. These health centres carry out immunization activities in their MCH departments.

2.4 STUDY UNITS

The study involved nurses working in the MCH department of the selected health centres and mothers of children attending immunization in those respective health centres.

2.5 SAMPLING AND SAMPLE SIZE

The study sample was drawn from the study population. Nurses working in the MCH departments of the selected health centres were eligible and recruited to the study. Out of an expected number of 204 nurses working in MCH department, only 84 nurses were found to be working in the MCH department. All 84 nurses were requested and agreed to participate in the study. Ten (10) mothers were selected at each health centre using systematic random sampling to take part in the focus group discussions.

2.6 DATA PROCESSING AND ANALYSIS

Questionnaires were used to collect data, and were individually coded by the researcher and entered into the computer using EPI-INFO software. The Focus Group Discussion (FGD) recordings were also processed by noting major points.

Data was also collected using a checklist in participant observation. The data collected was analysed manually.

As earlier stated a descriptive approach was used to analyse data. Simple tables are used in this report to present and interpret data.

2.7 ETHICAL CONSIDERATIONS

Ethical approval was obtained from the University of Zambia Research Ethics Committee. Permission to carry out the study was obtained from the Lusaka and Kafue District Health Management Boards respectively. Confidentiality and anonymity were assured and maintained throughout the data collection process.

2.8 PRE-TESTING OF DATA COLLECTION METHODS

Prior to the formal research, a small scale pre-test of the questionnaire, focus group discussion guide and check-list for participant observer was done at Kamwala and Chilenje health centres.

2.9 LIMITATIONS

A number of limitations were encountered in this study. Due to insufficient time and funding the number of health centres to be studied had to be reduced from five to four.

The sample represented 6.2% of the 15% of nurses assumed to be deployed in MCH departments of health centres. In view of the small sample the results can not therefore be generalised to the whole immunization programme in Zambia.

CHAPTER THREE

3.0 FINDINGS

Table 1 shows that the majority of respondents were female general nurses (94.0%) most of whom had children (85.7%) and had more than 9 years of working experience (61.9%).

Table 1: Demographic characteristics

SEX	RESPONDENTS	
	FREQUENCY	PERCENT
Female	79	94.0
Male	5	6.0
TOTAL	84	100.0
QUALIFICATIONS		
Midwife	31	36.9
General nurse	53	63.9
TOTAL	84	100.0
SERVICE		
0 N 4 years	8	9.5
5 N 9 years	24	28.6
10 N 14 years	24	28.6
15 years and above	28	33.3
TOTAL	84	100.0
HAVE CHILDREN		
Yes	72	85.7
No	12	14.3
TOTAL	84	100.0

Table 2 shows that most of the respondents (41.7%) reported the availability of standard disposal syringes and needles at their health centres as compared to the others. However, the majority (72.6%) of the respondents reported that their health centres did not have safety boxes for the disposal of sharps.

Table 2: Injection equipment

EQUIPMENT	RESPONDENTS	
	FREQUENCY	PERCENTAGE
Autodestruct	17	20.0
Sterisable	32	38.1
Standard disposable	35	41.7
TOTAL	84	100
SAFETY		
Yes	23	27.4
No	61	72.6
TOTAL	84	100.0

Table 3 shows that most (76.2%) of the respondents had knowledge about the use of autodestruct syringe needle and safety boxes. They were also conversant with the critical use and disposal procedures (90.5%).

Table 3: Knowledge of equipment and conversant critical use and disposal procedures

AUTODESTRUCT	RESPONDENTS	
	FREQUENCY	PERCENT
Yes	64	76.2
No	20	23.8
TOTAL	84	100.0
BOXES		
Yes	75	89.2
No	9	10.8
TOTAL	84	100.0
CONVERSANT		
Yes	76	90.5
No	8	9.5
TOTAL	84	100.0

Table 4 highlights 44.0% of respondents reported that their health centres had a budget and supply policy

Table 4: Budget and supply policy

BUDGE	RESPONDENTS	
	FREQUENCY	PERCENT
Yes	37	44.0
No	47	56.0
TOTAL	84	100

Table 5 shows that the majority of respondents reported that sterilization was the safest method of ensuring that injection equipment is safe for use. However, the majority of respondents (50%) reported abscess formation as the commonest complication of using unsterile injection equipment as compared to (17.9%) who reported HIV/AIDS and cross infections respectively.

Most (88.1%) of the respondents reported that they recycled disposable injection equipment instead of disposing it off. When injection equipment was out of stock 96.4% of the respondents reported asking mothers to buy/ bring their own.

Table 5: Knowledge of unsafe injection practices

SAFETY	RESPONDENTS	
	FREQUENCY	PERCENT
Disinfecting	7	8.4
Cleaning with soap and water	8	9.5
Sterilization	69	82.1
TOTAL	84	100.0
COMPLICATIONS		
Abscesses	42	50.0
Cross infection	15	17.9
HIV/AIDS	15	17.9
Pain	5	6.0
Paralysis	3	3.4
Septicaemia	2	2.4
Other diseases	2	2.4
TOTAL	84	100.0
RECYCLING		
Yes	74	88.1
No	10	11.9
TOTAL	84	100.0
BUY		
Yes	81	96.4
No	3	3.4
TOTAL	84	100.0

Table 6 shows that out of the 81 respondents who reported asking mothers to buy/bring their own injection equipment the majority (69%) took the precautionary measure of ensuring that they only used the equipment if it was in unopened packs.

Table 6: Safety measures for injection equipment brought by mothers

MEASURES	RESPONDENTS	
	FREQUENCY	PERCENT
Check expiry date	17	21.0
Use only if in unopened packs	56	69.0
Sterile before use	08	10.0
TOTAL	81	100.0

Information in Table 7 indicated that the majority (91.7%) of respondents reported accepting injection equipment voluntarily brought by mothers.

Table 7: Accepting injection equipment brought by mothers

ACCEPT	RESPONDENTS	
	FREQUENCY	PERCENT
Yes	77	91.7
No	7	8.3
TOTAL	84	100.0

Table 8 shows that the majority of respondents (73.8%) reported not receiving supervisory visits from their supervisors during immunization activities.

Table 8: Supervisory Visits

SUPERVISORY	RESPONDENTS	
	FREQUENCY	PERCENT
Yes	22	26.2
No	62	73.8
TOTAL	84	100

Table 9 shows that all the respondents recycled disposable injection equipment.

Table 9: Number of times disposal equipment recycled

RECYCLED	RESPONDENTS	
	FREQUENCY	PERCENT
Once	36	42.9
Many	48	57.1
TOTAL	84	100.0

Table 10 shows that the majority of respondents used one needle for each child immunized then disposed it off (89.3%).

Table 10: Use of needle on more than one child

USE	RESPONDENTS	
	FREQUENCY	PERCENT
Yes	9	10.7
No	75	89.3
TOTAL	84	100.0

Table 11 shows that those respondents who reported having a budget and supply policy had adequate stock of disposable injection equipment while (78.0%) of those who reported having a budget and supply policy had no adequate stock of disposable injection equipment. These results show an association between budget and supply policy and adequate stock of disposable injection equipment ($p<0.001$)

Table 11: Relationship between budget and adequate supply of injection equipment

BUDGET	ADEQUATE	
	YES	NO
Yes	32	8
No	15	29

Table 12 shows that of the respondents who were conversant with the critical use and disposal procedures reported the availability of safety boxes and incinerators at their health centres while (22.0%) of those who were not conversant reported having safety boxes and incinerators at their health centre. The results show an association between availability of safety boxes and incinerators and being conversant with critical use and disposal procedures.

Table 12: Relationship between availability of safety Boxes and incinerators and conversant with critical use and disposal procedures

BOXES	CONVERSANT	
	YES	NO
Yes	58	5
No	3	18

Table 13 shows that there was no association between having adequate stock of disposable injection equipment and number of times it is recycled, (P = 0.705).

Table 13: Relationship between of adequate injection equipment and the number of times equipment is recycled

ADEQUATE	TIMES RECYCLED	
	ONCE	MANY
Yes	18 (50.0%)	25 (52.0%)
No	18 (50.0%)	23 (48.0%)
TOTAL	36 (100.0%)	48 (100.0%)

The results in table 14 do not show an association between supervisory visits and number of times disposable injection equipment is recycled (P = 0.085).

Table 14: Relationship between supervisory visits and number of times equipment recycled

RECYCLED	SUPERVISORY	
	YES	NO
Once	30 (48.0%)	6 (27.0%)
Many	32 (52.0%)	16 (73.0%)
TOTAL	62 (100.0%)	22 (100.0%)

3.1 RESULTS FROM PARTICIPANTORY OBSERVATION

Observations were recorded using a check – list as a criteria for reporting observations. The pattern of the check-list was tailored to counter check the objectivity of responses to the self administered interview schedule.

3.1.1 TYPES OF INJECTION EQUIPMENT

Auto destruct syringes fixed with needles were not available at the four health centres. All the four health centres had standard disposable syringes and needles and only one had steel sterilizable syringes and needles. Only one health centre had an incinerator. Safety boxes for disposal of sharps were not available at all the four health centres.

3.1.2 CRITICAL USE AND DISPOSAL PROCEDURES

All the four health centres disposed their waste into a small bin. The centres had no safety puncture resistant containers. It was observed that some of the nurses were using disposable syringes and needles from damaged or punctured sterile packs.

It was also observed that at all the four health centres the staff did not check expiry dates of sterile packs.

There was no flushing of used injection equipment at all the health centres. All the health centres were however using forceps for handling sterilizable injection equipment during sterilization. Three health centres had functioning steam sterilizers while one did not.

3.1.3 SUPPLY OF INJECTION EQUIPMENT

Only One health centre had a good stock supply of standard disposable syringes and needles while the other three recycled syringes and needles.

It was observed that some mothers came with their own syringes and needles. This showed that the supply of syringes and needles at these

immunization sites were erratic and thus mothers were sometimes asked to provide their own, hence they usually came equipped just in case they are asked to go and buy.

3.1.4 SUPERVISION

Supervisory visits during the immunization activities were only observed at one health centre while at the other three health centres the MCH staff had no supervision.

3.2 RESULTS FROM THE FOCUS GROUP DISCUSSION

Participants in the Focus Group Discussions were asked questions to solicit information on their knowledge of safe injection practices. The age group of these mothers ranged between 15 and 30.

3.2.1 CHILDREN SOURCE OF ACQUIRING HIV/AIDS

The majority of the participants in the focus group discussions were not aware that HIV/AIDS could be acquired by their children from an injection needle. Most of the mothers only knew of sexual intercourse as the only means by which human beings acquired HIV/AIDS and were only aware that their children could get HIV/AIDS from their infected pregnant mothers.

3.2.2 KNOWLEDGE OF RISKS OF INJECTIONS WITH UNSTERILE NEEDLES

Although the majority of the participants in the focus group discussions were aware of the consequences of using unclean needles, they were however not

aware that one of such consequences could be HIV/AIDS transmission to their children.

Some mothers only mentioned abscesses and cold sores as the consequences of their children receiving injections from unclean needles. Some mothers commented that it was quite unusual for a child to have HIV/AIDS from a needle used by another child.

3.2.3 RECYCLING OF NEEDLES

The majority of the participants in the focus group discussion were aware that a needle should only be used once and that if it had to be used again it should be boiled as they had observed health workers do so in the past. Most of the mothers however expressed strong views against the boiling of needles because they become blunt and cause injuries to their children.

Only a few commented that reuse of unclean needles can be a source of transmission of HIV/AIDS to their children

3.2.4 SHARING OF NEEDLES FOR INJECTION OF CHILDREN

The majority of the participants in the focus group discussions commented strongly that no sane mother can use an injection needle that has been used by another just as they could not do so on themselves.

However, they explained that they were forced to buy syringes and needles from any source because sometimes the health centres ran out of stock of them and thus they usually came equipped just in case. They also took exception to their observation of some nursing staff who used one needle to inject more than one child. They further commented that it was not possible for the

mothers to share needles because needles were not given back to them after injection of their children.

3.2.5 OPINIONS ON HEALTH WORKERS PRACTICES

A few enlightened participants in the focus group discussion expressed dissatisfaction at what they called unhealthy practices of some nursing staff who were in the habit of using one needle on more than one child. Some explained that the nurses did not even wash their hands after injecting each child. Some participants however, commented that some of these health workers were hard working but lacked the necessary working tools such as needles and syringes hence their bad practices. A minority of the participants commented that some of the nurses did not even boil the injection equipment. They observed that they just rinsed it in water and reused later on other children. They also wondered why sometimes there is only one health worker to a multitude of children.

CHAPTER FOUR

4.0 DISCUSSION OF FINDINGS

Of all the 84 nurses who were interviewed 94% had children and all the 40 mothers had children. According to Bailey (1978) a woman cares for her children while the man's concern is to provide food and habitation for his family. Mothers are physiologically and psychologically attached to their children. This attachment known as symbiosis develops from the time of conception through the labour pains of childbirth and the period of breastfeeding. This makes a mother who has this experience to nurture every child like hers and thus ensure that the safety and well-being of any child is an emotional one regardless under whatever circumstance that child comes into contact with her.

The lowest serving among these nurses were 9.5% who had served not more than four years. This is the percentage that are likely not to have had children as they may just be settling down in a career and possibly looking forward to postgraduate training. They are therefore not likely to have children and not experienced the symbiosis and thus may not have the emotional affection that mothers have for children.

Disposable single use syringes and needles were reported available at the health centres by 61.9% of the nurses. The CBoH (2000) recommends the use of auto destruct syringe needle because they are designed in such a manner that it is impossible to use them more than once consequently they present the lowest chance of being recycled and subsequently the risk of transmission of blood borne pathogens.

However according to Daniel, (1994) the use of standard disposal syringes and needles in immunizations activities can only be done in settings where it is guaranteed they will be disposed in accordance with the critical use and disposal procedures. The disposal of used syringes and needles at immunization sites is best done by using puncture resistant safety boxes which are later incinerated.

According to WHO and UNICEF (1996) the expanded programme of immunization administers over 550 million injections in developing countries including Zambia hence the safety of disposal of these sharps must be a leading concern.

Most of the respondents (75.0%) reported that their health centres did not have safety boxes and incinerators. This is clearly a source of concern as to how the disposal of sharps was done. WHO and UNICEF (1994) stated that used injection equipment if not properly disposed of places the general public at high risk of disease and death. This is particularly so because these contaminated sharps may be reused by those mothers who cannot afford to buy them if not available at the health centres.

Although 90.5% of the respondents were conversant with the critical use and disposal procedures the fact that they lacked relevant equipment makes it doubtful if they practised the procedures accordingly.

An investigation of their knowledge of the various injection equipment revealed that the majority of respondents had good knowledge on the use of auto destruct syringe needle. This is particularly important because it is

preferred to the standard disposable syringe and needle because of its easy disposal. The respondents also showed good knowledge of the use of safety boxes and incinerator though the majority did not have them at their health centres. This shows that the respondents performance is highly hampered by the lack of equipment that promotes safe injection practices. It is therefore imperative that the necessary injection equipment is provided to immunization activities so to assure promotion of safe injection practice.

The results show that there was an association between availability of safety boxes/incinerator and being conversant with the critical use and disposal procedures. It looks like it's a case of out of sight out of mind. Those who had the safety boxes and incinerator became actively aware of the application of the procedures whilst those who did not completely disregarded the procedures.

It is therefore important to ensure that the necessary equipment is made available so as to promote the practice of safe injection practice.

An analysis of the logistics and supply policy revealed that 56% of the respondents reported that their health centres had no budget and supply policy.

According to a review on sustaining the benefits of Immunization within the Zambian Health Reforms only one district actually received all of the 1996 approved budget for immunization activities.

This makes it difficult for districts to plan their logistics and supply policies in terms of injection equipment requirement for use in immunization activities as

the supply of adequate injection equipment is cardinal to the promotion as well as the conduct of safe injection practices in the immunization activities. It is therefore important to ensure that health centres have a budget and supply policy for injection equipment in order for them to provide safe injections in immunization activities.

It is important to recognise that as a result of not having a sound budget and supply policy the majority of respondents resorted to asking mothers to provide their own injection equipment when they run out of stock. Because of the economic hardships in most households some mothers are forced to either obtain these equipment from illegal dealers or be forced to share with other mothers. According to Orabaton (2000) his random investigation of injection centres of Luapula Province revealed the practice of needle sharing among mothers taking children to immunization centres. This is mostly as a result of unavailable injection equipment at the health centre. It is however inconceivable to note that health staff promoted this practice knowing very well not only how unethical it is, but as well as, how risk it is in the transmission of blood borne pathogens such as HIV. One would wonder whether such staff were trained health personnel or classified daily employees who unorthodoxically have for decades carried out health care delivery in some of the rural health centres as a result of the unwillingness of qualified staff to serve in rural out posts.

The non-availability of a budget and supply policy is reflected in the manner in which injection equipment is recycled as reported by 88.1% of the respondents. Recycling syringes and needles through sterilization changes

their texture rendering them blunt and distorted. This results in injuries to children who are vaccinated using such injection equipment. Some of these children may end up with abscesses which culminate into septicaemia and eventual death. This was worse as 5.1% of the respondents who recycled this equipment reported that the equipment was recycled more than once. There is need therefore to ensure that auto destruct syringe needles are made abundantly available to immunization activities in order to avoid recycling.

When supply of adequate injection equipment was compared to number of times equipment recycled it was observed that there was no difference between adequacy of equipment and the number of times the equipment is recycled. This shows that respondents were in the habit of recycling of injection equipment regardless if they had adequate or not.

Most of the respondents in the study mentioned abscess as a complication of using unsterile injection equipment. This may be attributed to their having many mothers reporting their children developing abscesses a few days after immunization as a result of them injected with recycled needles which end up becoming blunt from constant boiling. This is worrying because by now one expects health staff to know that HIV/AIDS rather than abscess is the most serious complication that results from using unsterile injection equipment.

Despite HIV/AIDS being incorporated in the nursing curriculum, it seems the majority respondents are only versed with sexual intercourse as the commonest route of transmission of HIV/AIDS. This may imply that there is need to reconstitute the respondents on the other possible routes of transmission especially as regards to safety injection practices in

immunization activities. Often when people get accustomed to one cause they easily forget about other equally important causes.

An analysis of the number of supervisory visits the respondents received during the immunization activities revealed that 73.8% of the respondents were not supervised during immunization activities. According to WHO and UNICEF (1996) systematic supervision and periodic evaluation of injection practices are vital to ensure safety. Lack of supervision sometimes makes junior members of staff complacent such that they compromise safety. This can only be checked by regular superior supervisory visits during immunization activities to ensure that procedures are performed religiously to ensure that safety is not compromised in immunization activities. This is especially so in the supervision of disposal of used injection equipment to prevent it from ending up in wrong hands and being reused.

When supervisory visits were compared with the number of times injection equipment is recycled it was observed that those who were supervised reported recycling injection equipment just as much as those who had supervisory visits.

Complacent means they can only uphold safety precautions if they are supervised. This may also be due to the culture of being used to having inadequate supply of equipment whereby they have had been used to recycling injection equipment without due regard to safety. The majority of mothers whose children receive injections using recycled needles are not aware of the consequences of their children being injected with recycled needles and hence do not raise any objections. The health staff so recycling

these needles have become accustomed because they are not corrected by the superiors who do not visit them. Therefore there is need for constant supervision of immunization activities so as to curtail complacency. One way of doing this is by assigning a responsible superior member of staff during each immunization activity to ensure that safe injection practices are maintained.

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 CONCLUSION

This was a small study in which only four health centres were involved and only 84 nurses and 40 mothers took part in the study. The study set out to investigate if injections were administered safely and in accordance with the critical use and disposal procedures. It looked at some demographic profile and nurses knowledge and practice of the recommended procedures in ensuring that immunization is conducted in the safest possible manner.

Nurses were observed carrying out immunization activities. An inventory of available injection equipment was observed and noted. Information was also solicited from mothers who had brought their children for immunization. The mothers were investigated on their knowledge and understanding of practices that can place their children at the risk of contracting iatrogenic infections such as HIV/AIDS during the process of administering immunization injections.

The findings revealed that nurses had a high level of understanding of the critical use and disposal procedures that are important in ensuring that administration of injections was done in the most safest way. However, this understanding is threatened by inadequate supply of the equipment necessary for carrying out safe immunization activities.

Those nurses whose health centres did not have safety boxes did therefore not dispose off the sharps in line with the critical use and disposal procedures and as such placed the general public at high risk of disease and death because the used sharps were likely to fall in wrong hands. This is especially so because of inadequate injection equipment thereby compelling the nurses to ask the mothers to provide their own. Due to the poor economic position of most mothers, they might have ended up getting used syringes and needles for their children's immunization. The effect of this is exposing the children to the risk of acquiring iatrogenic infections such as HIV/AIDS.

According to the findings of this study, 72.6% of the nurses reported that their health centres did not have safety boxes. This meant that used injection equipment was not properly disposed of and most likely ended up being used especially by economically disadvantaged mothers who could not afford to buy these from drug stores and thus put their children at high risk of contracting iatrogenic infections.

However, those health centres which had safety boxes had the majority of nurses (95%) conversant and most likely practicing proper disposal procedures. These nurses most likely were able to implement the critical use and disposal procedures because they had the necessary equipment for the circumstance while those who did not have the equipment disregarded the implementation of the procedures and as such compromised the provision of safe injections.

It was further found that those health centres without a budget and supply policy did not have adequate injection equipment for immunization activities and as such the nurses were compelled to ask the mothers to bring their own injection equipment. Because of economic hardships in most households some mothers were forced to get their hands on unsterile injection equipment regardless of its source thus placing their children at risk of contracting iatrogenic infections such as HIV/AIDS.

The study also revealed that nurses at health centres which did not have adequate injection equipment were compelled to recycle syringes and needles as many times as possible. This renders them not safe for use especially that needles become blunt and cause injury to children. It is because of the use of recycled needles that made the majority of the nurses to be misdirected on the complications of using unsterile needles, where they mentioned abscesses disregarding HIV/AIDS. This is so because they had more children reporting with injection abscesses and injuries.

It was also found that all the nurses were not flushing the injection equipment which they were recycling. Contaminated syringes and needles may carry infected blood even after boiling and is therefore likely to transmit the infection upon being used on another child. This is so especially that one of the health centres did not have a functional steam sterilizer.

The study also revealed that most mothers were not aware that their children can acquire infections such as HIV/AIDS through unsterile injection. The mothers denied that they ever shared injection needles among themselves for the immunization of their children. They were however because of economic hardships forced to buy syringes and needles from any source when they were asked to provide their own. This put their children at high risk of acquiring infections from these needles which may have been contaminated.

The study illustrates how safety in immunization activities is compromised by inadequate injection equipment that is vital to the process of administration of vaccines to children. It is therefore concluded that the lack of adequate injection equipment compromises the nurses compliance to the principles of critical use and disposal procedures and as such renders the immunization activities very unsafe because it exposes children to the risk of contracting iatrogenic infections especially HIV/AIDS.

5.2 RECOMMENDATIONS

With the above findings from the study, the following are recommended.

The Ministry of Health through the Central Board of Health in conjunction with cooperating partners should:

1. Empower health centres with budgets in order for them to maintain sustainability of supply and stocking of adequate injection equipment for immunization activities.
2. Provide sufficient safety boxes and ensure that every health facility has an incinerator to facilitate the safe disposal of contaminated wastes.
3. Provide and promote the use of auto destruct injection equipment and phase out the use of sterilizable injection equipment.
4. Enforcement of compliance by health workers to the principles of critical use and disposal procedures as well as sensitization of health workers through workshops and seminars.
5. Strengthen supervision of immunization activities to enforce strict observance of the critical use and disposal procedures.
6. Educate the public on safe injection practices through the mass and print media as well as the use of enter-education.

5.3 SUGGESTIONS FOR FURTHER RESEARCH

The results from this research point to the need for a situational analysis approach to assessing the quality and safety of service delivery of immunization services in MCH clinics as well as the need for research on the most effective methods of providing safe immunization injections against immunizable diseases.

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APPENDICES

APPENDIX 1: QUESTIONNAIRE

Serial No.....

Clinic.....

SELF ADMINISTERED INTERVIEW SCHEDULE FOR NURSES WORKING IN THE MCH DEPARTMENT OF HEALTH CENTRES

Instructions

1. Answer all questions
2. Tick/circle against the correct answer or write in the space provided
3. Do not write name. Anonymity is required
4. Information will be held in confidence

SECTION A: DEMOGRAPHIC DATA

1. Sex
 - (a) Female
 - (b) Male
2. Qualifications
 - (a) Midwife
 - (b) General nurse
3. Years of Service
 - (a) 0 - 4 years
 - (b) 5 - 9 years
 - (c) 10 - 14 years
 - (d) 15 - 20 years
4. Do you have children
 - (a) yes
 - (b) No

SECTION B: QUESTION ON INJECTION EQUIPMENT

5. Which of the following equipment is available in your MCH Department:
- (a) Auto destruct syringe needle
 - (b) Sterilisable syringes and needles
 - (c) Standard disposable syringes needles
 - (d) Needleless jet injectors
6. Do you have safety containers and incinerator for the disposal of sharps?
- (a) Yes
 - (b) No
7. Are you conversant with the critical use and disposal procedures
- (b) Yes
 - (a) No
8. Does the health center have a budget and supply policy on injection equipment
- (b) Yes
 - (c) No

SECTION C: KNOWLEDGE ON USE AND DISPOSAL OF INJECTION EQUIPMENT

9. What is the auto destruct disposable syringe needle?
- (a) A syringe and needle that can be sterilized and reused
 - (b) A syringe on which the needle can be recapped
 - (c) A sterile packed syringe and sterile needle used once for each injection.
 - (d) A steel syringe and needle that is disposed off after each injection.

10. What is the use of safety boxes?
 - (a) For keeping sterile needles and syringes
 - (b) For disposal of used syringes needles and sharps
 - (c) For safe keeping of injection equipment
 - (d) For safe keeping of under five cards.

11. When is it advisable to use sterile syringes and needles?
 - (a) For mass immunization
 - (b) For single immunization
 - (c) For routine immunization
 - (d) For school health immunization
 - (e) Normal injection
 - (f) All the time

SECTION D: KNOWLEDGE OF UNSAFE INJECTION PRACTICES

12. How do you ensure safety of injection equipment?
 - (a) By disinfecting
 - (b) By thorough cleaning with water
 - (c) By sterilization

13. List 3 complication that can result from unsafe injection practices?
 - 1.....
 - 2.....
 - 3.....

14. If in short supply do you recycle disposable syringes and needles?
 - (a) Yes
 - (b) No

15. When syringes and needles are out of stock do you ask mothers to buy/bring their own
 - (a) Yes
 - (b) No

16. If yes specify what safety measures are taken
-
-
-
17. Do you accept syringes and needles brought by mothers for immunization of the their children
- (a) Yes
- (b) No
18. Do your superiors make periodic supervisory visits to immunization activities
- (a) Yes
- (b) No
19. If yes, how often?
-
-
-
20. Do you receive adequate injection equipment for immunization activities
- (a) Yes
- (b) No
21. How many times do you recycle syringes and needles?
- (a) Once
- (b) Twice
22. Do you use needles on more than one child?
- (a) Yes
- (b) No

THANK YOU

APPENDIX II: CHECKLIST FOR PARTICIPANTS OBSERVATION OF INJECTION PRACTICES

INSTRUCTIONS

1. Avoid and continuous note taking
2. Only write brief notes out of view of the clinic staff (if possible use lavatory).
3. Always be in pairs when carrying out participant observation

SECTION A: TYPES OF INFECTION EQUIPMENT AVAILABLE

- | | | |
|--------|-----|---|
| YES/NO | (a) | Auto destruct syringes fixed with needles |
| YES/NO | (b) | Sterilizable syringes and needles |
| YES/NO | (c) | Standard disposable syringes and needles |
| YES/NO | (d) | Safety boxes |
| YES/NO | (e) | Incinerators |

SECTION B: CRITICAL USE AND DISPOSABLE PROCEDURES

- | | | |
|--------|-----|--|
| YES/NO | (a) | Disposal of sterile packed syringes and
needles after single use |
| | (b) | Disposal after single use into safety puncture and resistant
container. |
| YES/NO | (c) | Use of disposable syringes and needles
from damaged or punctured sterile packs. |
| YES/NO | (d) | Use of expired sterile packs |
| YES/NO | (e) | Use of sterile syringe and needle for each injection |
| YES/NO | (f) | Flushing of used injection equipment |
| YES/NO | (g) | Handling of sterilizable injection equipment with forceps
during sterilization |

YES/NO (h) Proper method of sterilization of injection equipment (steam sterilizing)

SECTION C: SUPPLY OF INJECTION EQUIPMENT

YES/NO (a) Sterilization for reuse of standard disposable syringes and needles

YES/NO (b) Use of sterilizable syringes and needle for mass immunization

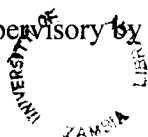
YES/NO (c) Mothers producing own syringes for immunization of their children.

YES/NO (d) Use and disposal of sterile syringe and sterile needle for each injection

SECTION D: SUPERVISORY

YES/NO (a) Superior supervisory visit by in-charge during the immunization activity.

YES/NO (b) Self supervisory by MCH staff



APPENDIX III: FOCUS GROUP DISCUSSION GUIDE

INSTRUCTION TO MODERATOR

1. Introduce self and recorder
2. Explain the purpose of the discussion and topic in general
3. Give assurance of confidentiality
4. Encourage participants to discuss subject matter openly
5. Let participants introduce themselves
6. Rules: Participants should listen to each other's opinion if possible only one person should speak at a time.

KNOWLEDGE OF RISK PRACTICES

1. Can your child get AIDS from a needle?
2. Do the mothers know the risks of an unsterile needle being used on their children?
3. How many times should a needle be uses?
4. Have the mothers ever shared needles with other mothers?
5. Have they ever witnessed a health worker using one needle on more than one child?
6. Do the mothers think it is healthy for their children to share needles?
7. Do health workers sometimes ask them to bring their own needles for immunization or treatment of their children?
8. Do mothers come with own needles in case there is none at the clinic?
9. What do mothers do if the clinic runs out of needles?
10. Do mothers think health workers administer safety injections to their children?

