

## Knowledge of Mothers with Regard to Immunisation of Children in Vhembe District, Limpopo Province

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**ABSTRACT** The Extended Programme on Immunisation aims at delivering the primary immunisation series to at least 90 percent of infants. It is considered essential for improving infant and child survival. In spite of the importance of immunisation on child survival, the coverage at the Tshino-Mutsha local area dropped from 85 percent to 75 percent during 2011-2012. The purpose of this study was to determine the knowledge of mothers' regarding immunisation of children below 6 years of age. A quantitative research approach, cross-sectional survey was used and simple random sampling was undertaken to sample 200 mothers at seven clinics, including the mobile clinic. Self-administered questionnaires were used to collect data. The Statistical Package for Social Sciences was used to analyze data. Findings indicated that illiterate mothers and those younger than 35 years with less than 3 children were more knowledgeable with regard to the importance of Immunisation. The government health facilities, especially at the primary level need to be more users-friendly by making it accessible to all and also by creating opportunities of information sharing on immunisation for mothers. Awareness campaigns and capacity building would empower mothers on immunisation.

### INTRODUCTION

Every year more than 10 million children in low and middle income countries die before they reach their fifth birthday (Kappor 2010; Chidiebere et al. 2014). Most of these children die because they do not have access to effective interventions that would combat common and preventable childhood illnesses (Ndume 2003). Immunisation is one of the most effective, safe and efficient public health interventions and while the impact of immunisation on childhood morbidity and mortality has been great, its full potential has yet to be reached (Kappor 2010; Scott et al. 2014). Infant Immunisation is considered essential for improving infant and child survival. It provides immunity from infectious diseases and can be induced either actively or passively. Passive immunity results from administering preformed antibodies in the form of human immunoglobulin (Lochhead 1991). This type of immunisation has an immediate effect, but the immunity lasts for only a few weeks. Active immunity results from using inactivated or attenuated live organisms; this, in turn stimulates the production of antibodies, the level of which should remain high for months or years, if a full course is given (Scott et al. 2014; Lochhead 1991).

The Millennium Development Goals (MDGs) report of 2011, Goal number 4 of 'Reducing Child Mortality' indicated that steady progress has been made to reduce mortality rate in children (Department of Economic and Social Affairs 2011). Globally, the mortality rate for children under five has declined by a third, from 89 deaths per 1000 live births in 1990 to 60 in 2009. All regions, except sub-Saharan Africa, Southern Asia and Oceania, have seen reductions of at least 50 percent (Howie et al. 2013; Department of Economic and Social Affairs 2011). Despite population growth, the number of deaths in children under five years worldwide declined from 12.4 million in 1990 to 8.1 million in 2009, which translates into nearly 12,000 fewer children dying each day (Department of Economic and Social Affairs 2011). The global Immunisation coverage has increased during the past decade to levels of around 78 percent for Diphtheria-Tetanus and Pertusis (DTP). WHO's African Region has consistently been falling behind, reaching only 69 percent of DTP coverage by 2004 (Mendy et al. 2013; Lee 2006). In response to challenges in global Immunisation, WHO and United Nations Children's Fund (UNICEF) set up the Global Immunizations Vision and Strategy (GIVS) in 2003. The main goal of GIVS was to reduce illness and death due to vaccine-preventable dis-

ease by at least two-thirds by 2015 or earlier (Arevshatian et al. 2007). Tshino-mutsha local area in Vhembe district provides a comprehensive Primary Health Care (PHC) package, of which child health care is part of that package. The data on the uptake of immunisation of children from October 2011 to December 2012 was 85 percent whereas in January to March 2013, was 75 percent (Primary Health Care and Hospital Statistics 2011-2012). Instead of this statistics to increase to the target of 90 percent coverage, needed by the Vhembe District, the rate was going down evenly. Uptake of vaccination services is dependent not only on provision of the services but also on other factors including knowledge and attitude of mothers (Bofarraj 2011). There was a need, therefore, to determine the knowledge of mothers with regard to Immunisation of children from 0–6 years of age at Tshino–Mutsha local area, Vhembe district, Limpopo Province.

## METHODOLOGY

The study was conducted in Tshino-Mutsha local area in Makhado municipality in the Vhembe district, Limpopo Province. A cross-sectional descriptive research design was used for this study. The study was descriptive in that the researcher collected detailed descriptive information concerning the knowledge of mothers with regard to immunisation of children 0-6 years.

### Sample and Sampling

The study population comprised of all mothers who were visiting seven (7) health care facilities for well-baby clinic or for baby consultation and who agreed to participate in the study. Probability, systematic sampling (Burns and Grove 2009) was used to select every third mother to participate in the study. Two hundred (200) participants were sampled during period, April to June 2013.

### Data Collection Methods

Ethical clearance was obtained from the University of Venda Ethical Committee. The permission to access health facilities was obtained from the Department of Health and Social Development Research Committee in the Limpopo Province, and the local area manager of the Primary

Health Care facilities. The principles of informed consent, principles of beneficence and right to privacy (Brink 2007) were observed, and consent was obtained from participants. Data were collected by administering structured questionnaires which included closed and open-ended questions by four research assistants under the supervision of the researchers at seven PHC facilities. The questionnaires were written in English and translated in Tshivenda. Participants who were illiterate were assisted by research assistants to complete. The instrument was pre-tested by administering the questionnaire to 20 participants their findings were not included in the main study. A total 100 percent response rate was obtained from participants. Descriptive statistics was used to analyse data, this enabled researchers to organise the data in ways that provided meaning and facilitated insight. Data were grouped into smaller categories, coded and presented in percentages. Both face and content validity were applied to avoid bias and to ensure that the instrument is measuring the content that it desires to measure. A panel of experts was used to evaluate and document the content validity of new instruments. They also examined the relevance of each item (Polit and Beck 2008).

## RESULTS

The findings were presented according to the participants' demographic data and mothers' knowledge of the importance of immunization.

**Table 1: Demographic details (n=200)**

<i>Variables</i>		<i>%</i>
<i>Age of Respondent</i>	18-25	30.5
	26-33	69.5
	>34	0
<i>Level of Education</i>	Degree	69.2
	Senior Certificate	30.8
	Others.	0
<i>Marital Status</i>	Single	78
	Married	22
<i>Employment Status</i>	Professional	27.5
	Sub Professional	11
	Unskilled/unemployed	61.5

Table 1 present the demographic details of the respondents. Out of two hundred mothers sampled the mean age was determined to be 28 years old. Mothers who were taking care of children below six years of age were mostly young

adults who had an interest in their children's care, including immunisation. Of the mothers sampled, 27.5 percent were employed professionally whereas 61.5 percent were unskilled or unemployed. This means that the mothers' employment status was related to their age. Most mothers had knowledge regarding immunisation regardless of their level of education and occupation status.

### Mothers' Knowledge of the Importance of Immunisation in Relation to Their Educational Level

A cross tabulation was made to check the knowledge levels of mothers in relation to level of education in Table 2.

**Table 2: Knowledge of immunisation and education level (n=200)**

Level of education	Knowledge regarding the importance of immunization (% of respondents)		
	Not knowledgeable	Knowledgeable	Total
Degree	4.5	3.5	8
Senior certificate	12	18.5	30.5
Other	29	32.5	61.5
Total	45.5	54.5	100

In this paper the knowledge of immunization in relation to the level of education pointed that 8 percent of participants who had degrees, only 3.5 percent knowledgeable about immunization. Also, of the 30.5 percent with a senior certificate, 12 percent had no knowledge about the importance of Immunisation, while about 18.5 percent had such knowledge. Of the 61.5 percent participants grouped in the category "Other" which denotes those who did not reach a matric level of education, 29 percent had no knowledge whereas 32.5 percent had knowledge in relation to the importance of immunisation. In total, 45.5 percent of mothers did not have knowledge compared to 54.5 percent who had knowledge of the importance of immunisation. This means that the level of education did not correlate with knowledge of immunisation issues. Because even among participants with degrees and senior certificate level of education there were those who did not have knowledge regarding immunisation.

### Mothers' Knowledge of the Importance of Immunisation in Relation to Their Number of Children

The mothers' knowledge of the importance of Immunisation in relation to their number of children is displayed in Table 3.

**Table 3: Cross tabulation: Importance of immunization number of children**

Number of children	Knowledge regarding the importance of immunization (% of respondents)		
	Not knowledgeable	Knowledgeable	Total
1-3	29.5	40	69.5
4-5	7	8.5	15.5
>5	8.5	6.5	15
Total	45	55	100

The findings in the Table 3, indicated that 69.5 percent of participants had 1-3 children of which 29.5 percent were not knowledgeable about 7 percent of participants with 4-5 children were not knowledgeable compared to 8.5 percent who had such knowledge. Lastly, about 8.5 percent of participants with more than 5 children had the necessary knowledge. There was no significant relationship between the number of children a mother's has and knowing the importance of immunization. Thus knowledge on the importance of immunization was spread fairly among mothers irrespective of the number of children they had. A vast experience of having babies did not necessarily mean that a mother was more knowledgeable but this situation is more influenced by one's access to hospitals/clinics and also location.

### Mothers' Knowledge of the Importance of Immunisation in Relation to Their Age

As presented in Table 4 of the 83.5 percent of mothers who were below 35 years of age, 37 percent did not have knowledge regarding the importance of immunisation, whereas 46.5 percent displayed such knowledge. Also, of the 16.5 percent mothers who were above 35 years of age, a near equal proportion (about 8.5 percent and 8 percent) had both knowledge and no knowledge of the importance of immunization respectively. It can thus be concluded that par-

ticipants below 35 years of age were more knowledgeable than those above 35 years of age.

**Table 4: Cross tabulation: Importance of immunization age (n=200)**

Age category	Knowledge regarding the importance of immunization		
	Not knowledgeable	Knowledgeable	Total
<35	37	46.5	83.5
>35	8.5	8	16.5
Total	45	54.5	100

There was no significant relationship between a mother's age and knowing the importance of immunization. Thus knowledge on the importance of immunization was spread fairly among mothers irrespective of their age. A vast experience in life does not guarantee knowledge on the importance of immunization.

#### Mothers' Knowledge of the Importance of Immunisation in Relation to the Antigens and Diseases Covered

Among mothers in the study sample, pneumococcal vaccine was the least known of all the vaccines, while Polio, Vitamin A and Hepatitis B were the most known vaccines. The high level of knowledge of the latter three vaccines may be related to biased campaigns towards the diseases they are meant to control. Table 5, present mothers with knowledge of Diseases Covered by Immunization. From this paper, 67.5 percent of mothers knew that Vitamin A prevented blindness whereas 32.5 percent did not know. By contrast, 49 percent of mothers knew that retrovirus prevented diarrhoea in children less than six years of age, whereas 51 percent did not know, and 53 percent of mothers knew that hepatitis B prevented hepatitis whereas 47 percent did not know. Data analysis showed that 19 percent of mothers knew that pneumococcal vaccines prevented pneumonia whereas 81.5 percent did not know, and 80.5 percent of mothers knew that polio vaccine prevented polio while 19.5 percent did not know. Also, 47.5 percent of mothers knew that BCG prevents tuberculosis whereas 52.5 percent did not know. Thus, Vitamin A, Polio and Hepatitis B were vaccines mostly known by mothers and mothers were aware of

the actions of these vaccines. On the other hand, pneumococcal, BCG and retrovirus vaccines and their actions were least understood by participant mothers. In this study, the knowledge of mothers regarding hepatitis was moderate (53%).

**Table 5: Proportion of mothers with knowledge of diseases covered by immunization**

Antigens	No.	%
Vitamin A	135	67.5
Retrovirus	98	49
Hepatitis B	106	53
Pneumococcal	38	19
Polio	161	80.5
BCG	95	47.5

#### Mothers' Knowledge of the Importance of Immunisation in Relation to Immunisation Schedule

The variable 'knowledgeable' was measured by the criteria that those who answered correctly more than 4 out of 10 questions pertaining to the immunisation schedule were deemed to be knowledgeable, and vice-versa. Moreover, 84 percent of mothers had adequate knowledge on the immunisation schedule which implies that their children were more likely to be immunized at the right time reducing the risk of exposure to childhood diseases. However, although 84 percent of mothers had a clue about the immunisation schedule, there were still 16 percent of mothers who had no such knowledge, which in actual fact increases their children to the risk of exposure to childhood diseases.

#### Mothers' Knowledge of the Importance of Immunisation in Relation to the Side Effects of the Measles Vaccine

Mothers had considerable knowledge of the side effects of the measles vaccine. About 85 percent of mothers had adequate knowledge of fever, 71.9 percent had knowledge of a fine rash, while only 51.5 percent had knowledge of abscess. Clearly, their differences of knowledge with regard to the different side effects may be due to the frequent occurrence of side effects such as fever compared to abscess

## DISCUSSION

A total of 200 mothers were interviewed with regard to their knowledge on immunisation of

children within the age group 0-6 years. The grouping was clustered in the following: Mothers' knowledge of the importance of immunisation in relation to their educational level, importance of immunisation in relation to their number of children, their age, antigen, diseases covered, immunisation schedule and side effects of the measles vaccine.

From the findings of the study, the distribution of the mothers' education were skewed in that only few had tertiary education while an overwhelming number of mothers had no or little education which was described by the category other's. There was no significant relationship between a mother's level of education and knowledge of the importance of immunisation. Thus, knowledge of the importance of immunisation was not only limited to educate mothers, but most mothers had an idea of these issues since they were exposed to awareness campaigns on immunisation, irrespective of their educational background. Rammohan et al. (2012) and Kapoor and Vyas (2010) found a highly significant difference among all educational strata in that mothers who were educated had more knowledge regarding vaccine preventable disease compared to their uneducated counterparts. These findings were similar to Sharma and Bhasin (2008) where the overall 57.8 percent of mothers were aware about all four mandatory vaccinations for infants (poliomyelitis, tetanus, diphtheria, hepatitis B). Education programmes promoting paediatric immunization, accessibility, and follow-up should be targeted to the entire population. However findings of the study by Angelillo et al. (1999) were different because it was indicated that illiterate parents may be over-represented among the non-responders. Low education level of parents may be associated with non-adherence to vaccination programmes. Kappor (2010) and Yousif et al. (2013) also concluded that lower levels of literacy of mothers were the cause of them not bringing their children for vaccination.

With regard to mothers' knowledge in relation to the number of children, there was no significant relationship. In this study, knowledge of the importance of immunisation was spread fairly among mothers; irrespective of the number of children. A vast experience of having babies and level of education did not necessarily mean that a mother was more knowledgeable, but this situation was more influenced by one's access to hospitals and clinics, and the location

(Chidiebere et al. 2014; Ahokhai 2008). Bofarraj (2011) was of the opinion that knowing little about vaccination does not necessarily translate into negative attitudes towards it, factors such as trust (for example, in health-care providers) and culture may be more influential.

There was no significant relationship between a mother's age and knowing the importance of immunization. A vast experience in life does not guarantee knowledge on the importance of immunization (Karimova 2014). Angelillo et al. (1999), was of the opinion that mothers' lack of knowledge about vaccinations is supported by the finding that the main reason for not vaccinating or not completing the vaccination schedule was that they had not been advised about them. However, in their study the level of knowledge about mandatory vaccinations for infants correlated significantly with the mother's age (that is, not being a teenage mother) (Nisar et al. 2010). Knowledge deficit was displayed with regard to antigen and immunisation schedule. Mothers displayed limited understanding on the antigen their children were supposed to receive during the next schedule. This was supported by Ravhengani et al. (2007) who indicated that few mothers knew the immunisation schedule. Hepatitis was the antigen that confuses most mothers. Findings of the study by Mapatano et al. (2008) concurred when indicating that, mothers had confusion in their minds as to which diseases were targeted by the EPI. Some mothers cited diarrhoea (3.9%) and malaria (3%) among the EPI-targeted diseases. Thus, many mothers attended immunisation sessions without knowing exactly for which vaccines they were there. Confusion about the vaccination scheme characterises incomplete immunisation. However, mothers displayed adequate knowledge of the various vaccines as outlined by the Expanded Programme on Immunization (1993), namely; BCG, polio, Measles-Dtap and Pcv – DtaP (Bon et al. 1998; Matsumura et al. 2005; Adeyinka et al. 2009). This was similar with the results of a cross-sectional household's survey which was carried out in Kinshasa by Nyandwe (1996) the findings indicated that mothers knew the schedule for BCG, Measles and Polio.

## CONCLUSION

Immunisation for children is the effective, safe and efficient public health interventions to prevent childhood morbidity and mortality. Find-

ings of the study indicated that mothers of children 0-6 years demonstrated inadequate knowledge with regard to immunisation schedule, antigen, diseases covered and side effects. There was no significant relationship on educational level, number of children and the age of the mother towards immunisation of children. There is a dire need to arrange for health education program sessions for mothers of under five children with main emphasis on importance of vaccination and Vaccine Preventable Diseases.

### RECOMMENDATIONS

The insufficient knowledge of mothers requires sincere effort on the part of the health professionals and policy makers to plan and execute the information, education and communication” initiatives. The government health facilities, especially at the primary level need to be more users friendly by making it accessible to all and also by creating opportunities of information sharing on immunisation for mothers. Awareness campaigns and capacity building would empower mothers on immunisation. This would increase and sustain the uptake of immunisation.

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