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RESEARCH ARTICLE

Mothers' Knowledge and Attitudes Towards Child Immunization in Georgia

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Abstract:

Background:

Vaccination is the administration of a vaccine to help the immune system develop protection from a disease. It is the most cost-effective mechanism for disease prevention that allows people to have better protection from specific bacteria and viruses.

Objective:

The goal of the research is to determine mothers' knowledge, attitudes and practices towards child immunization.

Methods:

In the framework of a cross-sectional study, 188 mothers with children from three to five years of age, were surveyed in 7 kindergartens of Tbilisi (capital city of Georgia). The semi-structured questionnaire was administered in a face-to-face manner.

Results:

The majority of interviewed mothers (97%) showed a positive attitude towards immunization and believe that vaccination plays an important role in disease prevention. 32% do not have sufficient information about the routine vaccination schedule and subsequently, 36% of children have incomplete vaccination. The reasons for incomplete vaccination are: a lack of knowledge about a routine vaccination schedule (25.5%), limited information about the necessity of the second or the third dose of vaccination (18.6%), fear of post-vaccination side effects (16%) and fear of a child illness (9.6%). A significant association was found between mothers' education, practice and attitude regarding immunization. Health institutions (49.5%) and internet sources (21.3%) were the most popular sources of information about immunization.

Conclusion:

Incomplete immunization is related to mother's lack of information about the immunization schedules, limited awareness about the second and the third dose of vaccination, and it is also related to fear of child getting sick after the vaccination. Some respondents believe that vaccination is not safe and can cause serious side effects. But the majority of mothers have a positive attitude towards child immunization, but their levels of awareness are very low and they do not have comprehensive information about a routine vaccination schedule. It is necessary to raise public awareness of the importance of immunization by implementing educational programs and by traditional and social media.

Keywords: Immunization, Vaccination, Child immunization, Infectious diseases, Prevention, Georgia.

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1. INTRODUCTION

Vaccination is the administration of a vaccine to help the body produce immunity against a disease [1]. It is the most cost-effective mechanism for disease prevention that allows people to better protect themselves from specific bacteria and viruses [2].

Large-scale immunization programs have significantly reduced morbidity and mortality worldwide [3]. Studies have shown that 2.5 million lives around the world are saved by vaccination against tuberculosis, poliomyelitis, diphtheria, tetanus and measles every year [4]. During 2017, about 85% of infants all over the world (116.2 million infants) received 3 doses of Diphtheria-Tetanus-Pertussis (DTP3) vaccine, protec-

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ting them against infectious diseases that can cause serious illness and disability or even death. By 2017, 123 countries had reached at least 90% coverage of DTP3 vaccine [5].

Georgia is a country in the Caucasus Region, located at the crossroads of Eastern Europe and Asia, with a population of almost 3.7 million [6]. Following independence, Georgia initiated health care reforms in 1995 [7]. The reforms' key components included decentralization and change in health care financing [8 - 12]. These reforms affected much of the health care sector, including the National Immunization Program. The National Immunization Program has been functioning since 1996. The goal of the program is to effectively protect the population from infectious diseases that can be prevented by vaccination and by providing full coverage and high quality services. The scheduled immunization of children and adolescents in Georgia is carried out in accordance with the Public Health Law and the National Immunization Schedule [9]. The Immunization state program funds the vaccines against 12 diseases (tuberculosis, B hepatitis, diphtheria, pertussis, tetanus, polio, Haemophilus influenzae type b, measles, rubella, mumps, rotavirus and pneumococcal infections) in the framework of universal health care program. In addition, two-year pilot program of vaccination against human papillomavirus for the girls born in 2008-2009 has been enabled to prevent cervical cancer. To ensure the high quality of vaccines, the state purchases only vaccines which are pre-qualified by the World Health Organization (WHO). Although Georgia has scaled up its vaccination coverage since 1996, coverage rates remained low over the course of the reforms [10]. For example, estimates in 2003 obtained from Georgia's new Immunization Management Information System reported coverage rates of 75% for DPT-3 and Polio-3, 48% for Hepatitis B-3 and 82% for Measles-1 [11].

Since 2013, the Universal Healthcare Program (UHCP) has been enacted in Georgia. The goals of UHCP are to improve financial access to health care services and to rationalize expensive hospital services by increasing primary health care utilization [12]. Under the UHCP, Georgia has made significant progress in improving access to health services [13, 14]. In the recent years funding of the National Immunization Program has significantly increased.

Despite the above-mentioned statistics, vaccination rates for tetanus, diphtheria, meningitis are low and amount 75% [15]. Measles is yet to be eliminated, which still remains one of the main reasons for early childhood mortality. There were 94 cases of measles in Georgia in 2017; 13% of cases occurred in children under the age of 1, and 33% - over the age of 14 years [16]. Knowledge, positive attitudes and appropriate perception towards vaccination are one of the basic means of reducing infectious diseases [17, 18]. Studies have confirmed that maternal education and practice has a positive impact on the immunization status [19, 20] - Vaccination awareness is significantly higher in mothers with higher education [21, 22]. The efforts of a robust primary health care approach also have a positive influence [23 - 25].

The accessibility of vaccines affects immunization status. According to the survey conducted in India, 30.5% of respondents were not vaccinated completely due to the low vaccine accessibility [24].

The negative attitudes from parents such as: mother's fear of vaccination, adverse effects and a tendency to refrain from immunization because of mild illness, are considered to be the barriers for a child vaccination [25]. According to the survey conducted in Georgia, the main reason for abstaining from vaccinations was the negative attitude towards immunization [26]. Mothers with a negative attitude towards immunization do not vaccinate their children, also they do not seek additional information from health workers or other sources (complete distrust). Some specialists who are not involved in immunization and share negative viewpoint also play a role in spreading false information about vaccination [27]. According to one of the surveys in the USA, some parents believe that vaccination may cause autism [28].

The surveys confirm that the high coverage of immunization was reached with the help of primary health care [29]. In countries, with an effective primary care system, the level of complete immunization is higher [30].

The role of media, internet and social media is important for immunization [31, 32]. Mothers consider the internet as the second most reliable source after medical workers [33]. The research shows the necessity of enhancing technical capabilities, as well as interpersonal communication skills of healthcare workers involved in immunization system because they are the most reliable source of information for the majority of mothers [34].

The goal of this study is to evaluate mothers' knowledge, attitude and behavior towards child immunization. This will enable us to identify the reasons for incomplete immunization and other factors affecting low rates of vaccination. The findings of this research will be useful for planning interventions aimed at expanding vaccine coverage and timing.

2. MATERIALS AND METHODS

This is a cross-sectional descriptive study that was conducted in 7 kindergartens of Tbilisi (capital city of Georgia). There are 157 kindergartens in Tbilisi [35], from which 7 locations were randomly selected. Data was collected consecutively from mothers with at least one child (aged 3-5 years) attending the kindergarten. Interviews were carried out daily at 5 PM when mothers usually come to take their children from kindergarten. All mothers were asked to participate in the personal interview survey. The survey instrument was a semi-structured questionnaire. The questionnaire was modified from the relevant studies [36]. In order to access the difficulty of the questionnaire, 15 pilot interviews were initially conducted. The field work took place between January and March 2018. In total, 188 respondents were interviewed. Each interview lasted for 35- 45 minutes on average.

The survey instrument tried to assess socio-demographic profile of mothers (such as: age, level of education, employment status, number of children, and the main source of information about immunization). In addition, the survey instrument was constructed in a way to evaluate child's immunization status, reasons for incomplete immunization as

Table 1. Distribution of socio-demographic characteristics of mothers.

S.NO	Social-Demographic Indicators	n = 188	Percentage Share (%)
1	**Age**		
	< under 20	14	7.4
	21-25	49	26.1
	26-30	91	48.4
	31-35	22	11.7
	36-40	8	4.3
	> 41	4	2.1
2	**Education**		
	Incomplete secondary education	10	5.3
	Full secondary education	53	28.2
	Bachelor's Degree	110	58.5
	Master's Degree	15	8.0
3	**Employment Status**		
	Employed	42	22.3
	unemployed	146	77.7
4	**The number of children**		
	1 child	83	44.1
	2 children	96	51.1
	3 children	21	11.2
5	**Immunization status**		
	Complete	120	64
	Incomplete	68	36

Table 2. The Knowledge, attitudes and perceptions of mothers (n = 188).

S.No	Knowledge Assessment Questionnaire	Yes (%)	No (%)	I Find it Hard to Answer (%)
1	Do you have the information about routine vaccination schedule?	63	10	27
2	Do you have a positive attitude towards immunization?	76	3	21
3	Do you think that diseases can be prevented through vaccination?	58	19	23
4	Are you satisfied with the immunization campaigns launched by government?	71	9	20
5	Do you know about the beginning and completion period of child vaccination?	73	6	21
6	Do you think that side effects of vaccine are dangerous?	4	89	7
7	Do you think that child with common cold should be vaccinated?	48	34	18
8	Do you think that Child with a fever should be vaccinated?	13	49	38
9	Do you think that Child with diarrhea should be vaccinated?	42	12	46

well as knowledge, attitude and practice of mothers regarding immunization. Results are summarized as follows.

Ethical approval was obtained from the Health Policy Institute and informed consent obtained from mothers. Data entry and analysis were conducted using Microsoft Excel and SPSS.

3. RESULTS

The majority of surveyed mothers (48.4%) were between the ages of 26 and 30. In terms of the level of education, the respondents were characterized by relatively non-homogenous composition. The majority of respondents had higher education (bachelor's degree - 58.5%, Master's degree – 8%), one-third had a full secondary education (28.2%). The majority of mothers were unemployed (77.7%) and had 2 children (51.1%) (Table **1**).

The majority of respondents (66%) showed a positive attitude towards immunization, 71% were satisfied with the immunization campaign carried out by the government. Fifty eight% of respondents considered that some diseases can be prevented by immunization, and only 4% thought that vaccination is harmful. 63% of respondents had information about vaccination calendar. Seventy three% considered that children should be vaccinated at birth. Thirty four% believed that a child with acute respiratory infections should not be vaccinated; 49% considered that a child with a fever should not be vaccinated; 42% believed that a child with diarrhea may be vaccinated (Table **2**).

73% of respondents considered their children as completely vaccinated (64%). Apart from the lack of information about vaccination calendar, less awareness about the second or third dose of vaccine (18.6%) can also be mentioned

Table 3. Reasons for incomplete immunization (n = 68).

S.No	Reasons for Incomplete Immunization	Total	%
1	Mother was too busy	7	10.1
2	There is no risk of infection	2	2.7
3	The vaccine was not available	1	2.1
4	The time for Immunization is not convenient	3	4.3
5	The child was not vaccinated because of illness	7	9.6
6	Mother does not have information about the need for a second or third dose	13	18.6
7	Distrust in the vaccination	3	4.8
8	Fear of side effects after vaccination	11	16.0
9	Do not have the information about the routine vaccination schedule	17	25.5
10	Was not aware of the need for the immunization	4	6.3

as one of the main reasons for mother's choice to abstain from vaccination. Some respondents believed that vaccination is harmful and had fear regarding the side effects (16%) (Table **3**).

Table 4. Connections between socio-demographic characteristics and immunization status.

	Immunization Status	
	Complete n=120 (64%)	Incomplete n=68 (36%)
Education of Mother		
Incomplete secondary education	2 (20%)	8 (80%)
Full secondary education	10 (18.9%)	43 (81.1%)
Bachelor's Degree	95 (86.4%)	15 (13.6%)
Master's Degree	13 (86.7%)	2 (13.3%)
Employment of Mother		
employed	18 (43%)	24 (57%)
unemployed	102 (70%)	44 (30%)
The Number of Children		
1 child	21 (25%)	50 (75%)
2 children	81 (84%)	15 (16%)
3 children	19 (90%)	2 (10)

Medical staff (49.5%) and internet (21.3%) have had an increasing effect on vaccine perceptions and vaccine decision-making. (Table **5**)

Table 5. Main sources for receiving information about the immunization.

Source	N	%
Medical workers	93	49.5
Television	27	14.4
Internet	40	21.3
Printed Press	7	3.7
Friends and relatives	22	11.7

The relationship between immunization status and demographic characteristics, such as the mother's education level and employment status was examined. The research confirmed that mothers' education has an influence on child immunization. Majority of mothers with higher education had vaccinated their children completely. 86.7% of mothers with a Master's degree and 86.4% of mothers with Bachelor's degree had vaccinated their children completely, while the children of most mothers with secondary education were not completely vaccinated. Levels of complete immunization for the first child were relatively lower than those of the second and third child. The main reason for this can be the awareness of mothers and an improved knowledge concerning the benefits of immunization (Table **4**).

4. DISCUSSION

The results demonstrate that mothers have positive attitudes towards immunization and the majority of them vaccinate their children. The majority of mothers believe that vaccination plays an important role in disease prevention. The research also confirmed that education and employment status of the mother showed an effect on child immunization. Mothers with higher education were more likely to be fully vaccinating their children. The similar connection between the mother's education level and immunization status was observed in other studies as well [37, 38]. The children of unemployed mothers were more likely to be fully vaccinated than the children of employed mothers. A similar connection between the employment status of a mother and the level of immunization was observed in other studies as well [39].

Rates of full immunization for the first child were relatively lower than for the second and the third child. The above-mentioned results highlight the positive influence of mother's education, awareness and experience on immunization status. The connections between child order and immunization status were observed in other researches as well [40].

The research showed that almost one-third of children were not fully vaccinated, which is mainly related to mother's lack of information about the immunization calendar, also less awareness of the second and the third dose of vaccination. Some respondents believe that vaccination is not safe and they fear the possible side effects. The child's poor health condition at the time of vaccination was also blamed as the main reason for incomplete immunization.

The study showed that the most important source of information on vaccination is medical staff. It is necessary to increase the use of mass media (television, radio, printed press, Internet) to raise awareness about the importance of immunization. In this regard, efforts of electronic media in recent years may increase the immunization indicator.

CONCLUSION

The majority of mothers showed positive attitude towards child immunization. They believed that vaccination plays an important role in preventing some diseases. At the same time, the indicator of their awareness waslow – the majority of mothers vaccinate their children but do not have comprehensive information about a routine vaccination schedule. It is necessary to raise public awareness on the importance of immunization by education programmes, electronic and mass media.

QUESTIONNAIRE

1. Age

< under 20

21-25

26-30

31-35

36-40

> 41

2. Education

• Incomplete secondary education

• Full secondary education

• Bachelor's Degree

• Master's Degree

3. Employment Status

• Employed

• unemployed

4. The number of children

• 1 child

• 2 children

• 3 children

5. Immunization status

• Complete

• Incomplete

6. Do you have the information about routine vaccination schedule?

a) Yes b) No c) I find it hard to answer

7. Do you have a positive attitude towards immunization?

a) Yes b) No c) I find it hard to answer

8. Diseases can be prevented through vaccination

a) Yes b) No c) I find it hard to answer

9. Are you satisfied towards the immunization campaigns launched by government

a) Yes b) No c) I find it hard to answer

10. Do you know about the beginning and completion period of child vaccination?

a) Yes b) No c) I find it hard to answer

11. Are side effects of vaccine dangerous?

a) Yes b) No c) I find it hard to answer

12. Child with common cold be vaccinated

a) Yes b) No c) I find it hard to answer

13. Child with a fever be vaccinated

a) Yes b) No c) I find it hard to answer

14. Child with diarrhea be vaccinated

a) Yes b) No c) I find it hard to answer

15. Reasons for incomplete immunization

a) Mother was too busy

b) There is no risk of infection

c) The vaccine was not available

d) The time for Immunization is not convenient

e) The child was not vaccinated because of illness

f) Do not have information about the need for second or third dose

g) No belief in the vaccination

h) Fear of side effects after vaccination

i) Do not have the information about routine vaccination schedule

g) Was not aware of the need for immunization

16. Information sources on immunization

a) Medical workers

b) Television

c) Internet

d) Press

e) Friends and relatives

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Ethical approval was obtained from the Health Policy Institute.

HUMAN AND ANIMAL RIGHTS

No animals/ humans were used for the studies that are the basis of this research.

CONSENT FOR PUBLICATION

Informed consent was obtained from mothers.

AVAILABILITY OF DATA AND MATERIALS

Not applicable.

FUNDING

None.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest, financial or otherwise.

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Declared none.

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