

# Immunization KAP Survey in the Country of Georgia, 2016 Final Report



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## Abbreviations

BCG – (Bacille Calmette-Guérin) Tuberculosis vaccine

EPI – Expanded Program on Immunization

FG - Focus Group

HCWs – Health Care Workers

Hib - *Haemophilus influenzae* type b

HPV - Human Papilloma Virus

MoH- Ministry of Health

MMR - Measles, mumps, rubella

NCDC – National Center for Disease Control and Public Health

OPV – Poliomyelitis Vaccine

PCV - Pneumococcal vaccine

PR – Prevalence Ratio

TIP - Tailoring Immunization Program

VPD - Vaccine-preventable diseases

## Summary

Immunization KAP Survey in the Country of Georgia represent the second collaborative research project of L. Sakvarelidze National Center for Disease Control and Public Health (NCDC) and The United Nations Children's Fund (UNICEF) aimed to identify the major barriers/gaps in the current immunization program and key determinants that influence participation in infant and child vaccination to inform communication strategy in the country of Georgia.

The survey was conducted among representative sample of 2014 birth cohort's main caregivers in three largest cities of the country including Tbilisi, Kutaisi and Batumi with qualitative (in-depth interviews and focus group discussions) and quantitative (Knowledge, Attitude and Practice population survey) methodologies. The survey also included extraction of official immunization status data for the selected birth cohort representatives from the local vaccine provider clinics.

### Main Findings

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# 1 Introduction

Though there are no exact information routine infant immunizations against diphtheria, tetanus, pertussis, and tuberculosis is considered be in place in Georgia since late 1950s, against poliomyelitis (oral polio vaccine – OPV) and measles - since 1960s. Hepatitis B vaccine was introduced in 2000, rubella and mumps vaccines were added in 2004, Hib vaccine - in 2010, rotavirus vaccine - in 2013 and pneumococcal conjugate vaccine (PCV) was introduced in 2014. In the last decade, the national immunization schedule underwent changes to accommodate introduction of new vaccines (rotavirus, PCV) and new combination products, such as pentavalent vaccine against diphtheria, tetanus, pertussis, Hib and hepatitis B (Penta), and measles, mumps and rubella (MMR) vaccine. In addition to government-provided vaccines, vaccines are also imported through the private sector, which offers some products not provided through the national program, such as Chickenpox (varicella) vaccination.

Routine childhood immunization in Georgia is delivered according to the Public Health Law and the National immunization schedule (MoH Decree № 01-57/n, November 19, 2015). As of January 2016, the national immunization schedule provides vaccination against 12 infections: tuberculosis, diphtheria, tetanus, pertussis, hepatitis B, *Haemophilus influenzae* type b (Hib), measles, mumps, rubella, poliomyelitis, rotavirus, and pneumococcal infection (Table 1).

**Table 1. Recommended national immunization schedule in Georgia (last updated December 2015)**

Age	0-12 hours	0-5 days	2 mont hs	3 mont hs	4 mont hs	12 mont hs	18 mont hs	5 years	14 years
Hepatitis B	HepB 0								
Tuberculosis	BCG								
Diphtheria, tetanus, pertussis, IPV, Hib, hepatitis B*			Hexa 1	Hexa 2	Hexa 3				
Diphtheria, tetanus, pertussis							DTP 4		
Poliomyelitis (bivalent)							OPV 4	OPV 5	
Rotavirus			Rota 1	Rota 1					
Pneumococcal infection*				PCV 1	PCV 2	PCV 3			
Measles, mumps, rubella						MMR 1	MMR 2		
Diphtheria, tetanus								DT 5	

Immunization coverage in Georgia has been high until 1990<sup>1</sup>, but had declined in the 1990s, during the immediate period after the regaining of independence and subsequent armed conflicts and economic crisis. Although immunization services have improved in the last decade, major challenges remain, as demonstrated by continued occurrence of outbreaks of vaccine-preventable diseases (VPD), such as measles and rubella. Reported coverage remains suboptimal for most antigens (Table 2) though due to difficulty with determining target population for vaccination (as a result of long intervals between population censuses (in 1989, 2002, and 2014), extensive population migration within and outside the country, and lack of defined catchment populations for health care facilities (HCF) accuracy of coverage data is questionable. To address the uncertainty with measuring immunization coverage in Georgia, a nationwide immunization coverage survey is being conducted among three birth cohorts throughout the country.

**Table 2. Official estimates of immunization coverage reported to WHO, Georgia, 1990-2014**

Vaccine	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985	1984	1983	1982	1981	1980
<b>BCG</b>	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70
<b>DTP3</b>	94	91	88	82	51	88	82	88	74	88	65	88	89	88	89	89	89	85	55	55	55	48	48	48	45	46
<b>HepB3</b>	94	91	93	92	95	94	94	93	94	94	91	91	95													
<b>HepB-BD</b>	93	95	80	93	93	90	95	95	93	97	93	95	90	96												
<b>Hib3</b>	94	91	93	92	92	97																				
<b>MCV1</b>	96	92	97	93	94	94	93	96	97	95	92	96	90	99	90	97	97	90	95	98	91	93	91	96	91	99
<b>MCV2</b>	91	97	99	94	97	94	91	97	92	98	97	95	94	98												
<b>Pol3</b>	91	91	94	93	91	98	93	90	98	98	94	96	95	90	91	98	98	95	98	94	92	92	92	98	95	97
<b>Rota1</b>	80	97	97																							

<sup>1</sup> Direct comparison of pre 1990 coverage rates with the rates assessed since 1990 is not possible because of differences in methodologies



<b>Rota</b>	7	6	5								
<b>2</b>	2	9	6								
<b>RCV1</b>	9	9	9	9	9	8	9	9	9	9	3
	6	7	3	4	4	3	7	7	5	2	1

Frequent changes in the HCF management, operational and financing systems, “optimization” of programs (including immunization programs), lack of geographically defined catchment areas for HCFs and extensive turnover of medical staff has affected the quality of services resulting in the lack of motivation of the personnel, lower awareness on safe immunization practices, problems with planning target population and delivery of vaccinations. The lack of defined catchment areas creates greatest problems in big cities where large numbers of providers exist along with substantial populations unregistered with HCFs. As a result, the coverage for most antigens remains below the national target of 95%, particularly in larger cities such as Tbilisi, Batumi, and Kutaisi. Notably, in the large scale outbreak of measles ongoing since early 2013 which resulted in over 11,000 cases (~8,000 in 2013, ~3,000 in 2014, and ~200 in 2015 as of April) more than 50% of cases occurred in the capital city of Tbilisi which houses approximately 25% of the country’s population.

In addition to the issues related to technical capacity, infrastructure and access to the services inadequate knowledge and perceptions of immunization stakeholders were identified as another important barrier for vaccination coverage in the country. In 2012 NCDC with support and collaboration of UNICEF carried out formative research “Concern and Resistance to Immunization and their Causes Among Key Stakeholders in the Context of Introduction of Rotavirus Vaccine in Georgia”<sup>2</sup> using qualitative and qualitative methodologies among various groups of stakeholders (e.g. mothers, HCWs, insurance company managers, media and religious leaders) in three regions of the country (Tbilisi and two regions with low vaccine coverage). The findings of the formative research was in line with existing data from the preceding relatively small scale studies<sup>3,4,5</sup> and provided insight on various stakeholders’ perceptions and concerns on immunization in the context of introduction of new rotavirus (RV) vaccine in the routine immunization schedule. The formative research revealed the barriers for vaccine uptake among population, including inadequate use of contraindications, negative media reporting and stakeholders’ concerns about safety and effectiveness of vaccination.

The qualitative part of the research did not provide possibility to estimate the quantitative importance of identified findings though generated important information for the communication strategy, including information on: the existing gap in the knowledge and the

<sup>2</sup> <http://ncdc.ge/Category/Article/3230>

<sup>3</sup> Topuridze M, ButsaShvili M, Kamkamidze G et al. Hepatitis B Vaccine Coverage among Healthcare Workers: Barriers to Coverage. *Infect Control Hosp Epidemiology*. 2010 Feb; 31(2):158-64.

<sup>4</sup> Base-line Survey, COMBI-Immunization Plan for Georgia, REPORT, 2006. Available at: [http://www.unicef.org/georgia/Unicef\\_Immunization\\_Report\\_2007\\_Eng\\_Final\\_ed.pdf](http://www.unicef.org/georgia/Unicef_Immunization_Report_2007_Eng_Final_ed.pdf) Accessed on: 1 May 2012

<sup>5</sup> Immunization Programme Management Review, Georgia17–27 July 2006 Available at: [http://www.healthcarewaste.org/fileadmin/user\\_upload/resources/Immunization-Programme-Management-Review-Georgia-2006.pdf](http://www.healthcarewaste.org/fileadmin/user_upload/resources/Immunization-Programme-Management-Review-Georgia-2006.pdf) Accessed on: 1May 1, 2012

concerns among key stakeholders (including health care workers); the barriers for health professionals to provide adequate consulting (including management of side effects ) and to communicate about immunization with caregivers and media representatives; the most effective ways and channels for communication;

Considering lack of up-to-date nationwide data on existed barriers of vaccine uptake in Georgia there was a need for conducting research to identify causes and reasons for postponement, dropout and refusal of vaccination by caregivers to inform communication strategy that would tackle concerns and resistances to immunization and their causes.

## **Goals and Objectives**

### **Goal**

The overall goal of the proposed research was to identify the major barriers/gaps in the current immunization program and key determinants that influence participation in infant and child vaccination to inform communication strategy in the country of Georgia.

### **Objectives**

The specific objectives of the proposed research were to:

- (i) collect the information on stakeholders' vaccination-related knowledge, perceptions and behaviors;
- (ii) Identify main drivers and preventing factors for the caregivers to participate in infant and child vaccination services;
- (iii) Reveal alternative practices caregivers who are not vaccinating their children adopt to protect their children from vaccine preventable diseases (VPDs);
- (iv) Assess the role Health Care Workers' (and other influencers) play in immunization and the drivers or preventing factors for health workers from recommending or providing childhood vaccination to caregivers;
- (v) Identify the key variables that distinguish different groups from each other to segment and profile target groups for the campaign;
- (vi) Explore stakeholders' use of media and communications to assess the most effective communication channels.
- (vi) Develop recommendations for communication strategy.

### **Activities**

To obtain required information from stakeholders the following sub studies were conducted:

- (1). Qualitative survey among immunization stakeholders;
- (2). Nationwide cross-sectional KAP survey among primary caregivers;
- (3). Small-scale vaccine coverage survey in the local vaccine provider health facilities for survey cohort participants.

## 2 Methodology

Conceptual framework of the proposed study project was based on the Guide to Tailoring Immunization Programs' (TIP)<sup>6</sup>. Qualitative as well as Quantitative research methods were utilized to identify and evaluate key stakeholders' concerns, beliefs, practices and information gaps related to immunization decision-making patterns related to the vaccine preventable diseases (VPD) and immunization, information channels and trustworthiness of information sources at the community level.

Selection criteria of study population were based on ecological conceptual framework, commonly used in health planning formative studies<sup>7, 8</sup> (Fig.1). The framework distinguishes levels or categories of people involved in decision-making process concerning child immunization. These levels represent important target audiences for developing a health communications strategy aimed at engaging communities in immunization activities, including:

- 1. The individual level:** Parents and other primary caregivers (A primary caregiver is defined as the adult who is legally responsible for the child, and makes decisions regarding their health, including vaccination, e.g. mother, father, foster caregiver or grandparent) of children.
- 2. The interpersonal level:** Secondary influencers such as health care workers and other communicators such as surrounding of parents (e.g. friend and peers).
- 3. The community level:** Community and religious leaders, local administrators, local government officials and media representatives.
- 4. The institutional level:** Health and education setting (schools), day care centers, insurance companies, NGOs and social media.

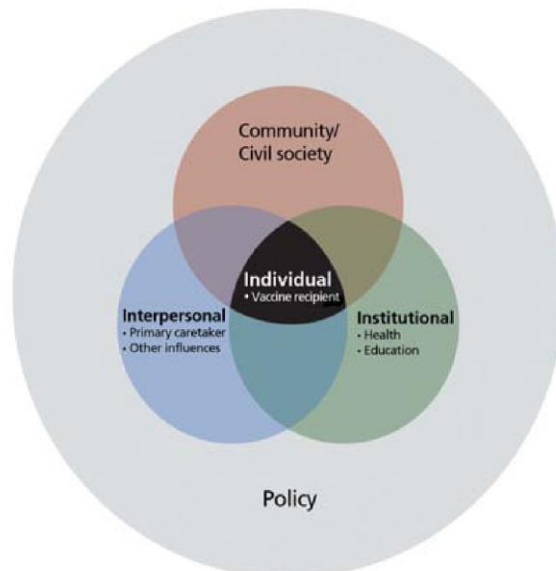
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<sup>6</sup> The Guide to Tailoring Immunization Programmes (TIP) - WHO/Europe [http://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0003/187347/The-Guide-to-Tailoring-Immunization-Programmes-TIP.pdf](http://www.euro.who.int/__data/assets/pdf_file/0003/187347/The-Guide-to-Tailoring-Immunization-Programmes-TIP.pdf)

<sup>7</sup> Green LW, Kreuter MW: Health Program Planning: An Educational and Ecological Approach New York: McGraw-Hill; 2005.

<sup>8</sup> Bingham A, Janmohamed A, Bartolini R, Creed-Kanashiro HM, Katahoire AR, Khan I, Lyazi I, Menezes L, Murokora D, Quy NN, Tsu V: An approach to formative research in HPV vaccine introduction planning in low-resource settings. Open Vaccine J 2009, 2:1-16.

Figure 1. An ecological framework for guiding formative research about vaccine introduction.



Considering the findings from the UNICEF funded 2012 immunization survey the proposed research was targeted on the four main groups of immunization stakeholders representing primary target groups of social and behavior change communication programs, Including:

- (1) Mothers of children under 2 years of age including those who refuse to vaccinate children and those from low coverage region represented by diverse ethnical, religious groups and IDPs;
- (2) Resistant social groups;
- (3) Primary health care providers involved in EPI;
- (4) Neurologists;

The research tools utilized for the proposed research was based on the TIP guide conceptual framework (in specific – “The pathway to caregiver decision-making regarding childhood vaccination”) and assess all potential factors influencing target group immunization related practices provided in the guide.

Figure 2. Pathway to caregiver decision-making regarding childhood vaccination

VPD prevalence and incidence  
(global, national and local)

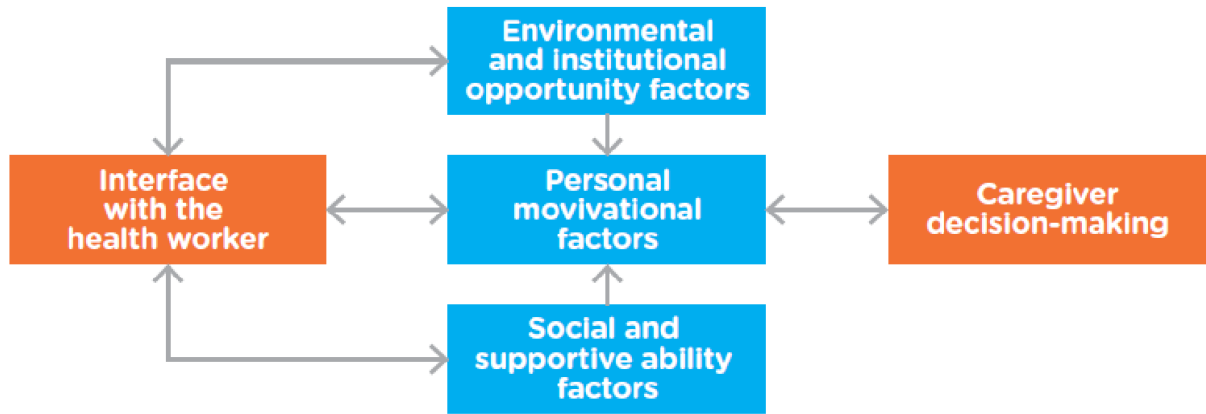


Figure 3. What influences caregivers' use of infant and child vaccination services

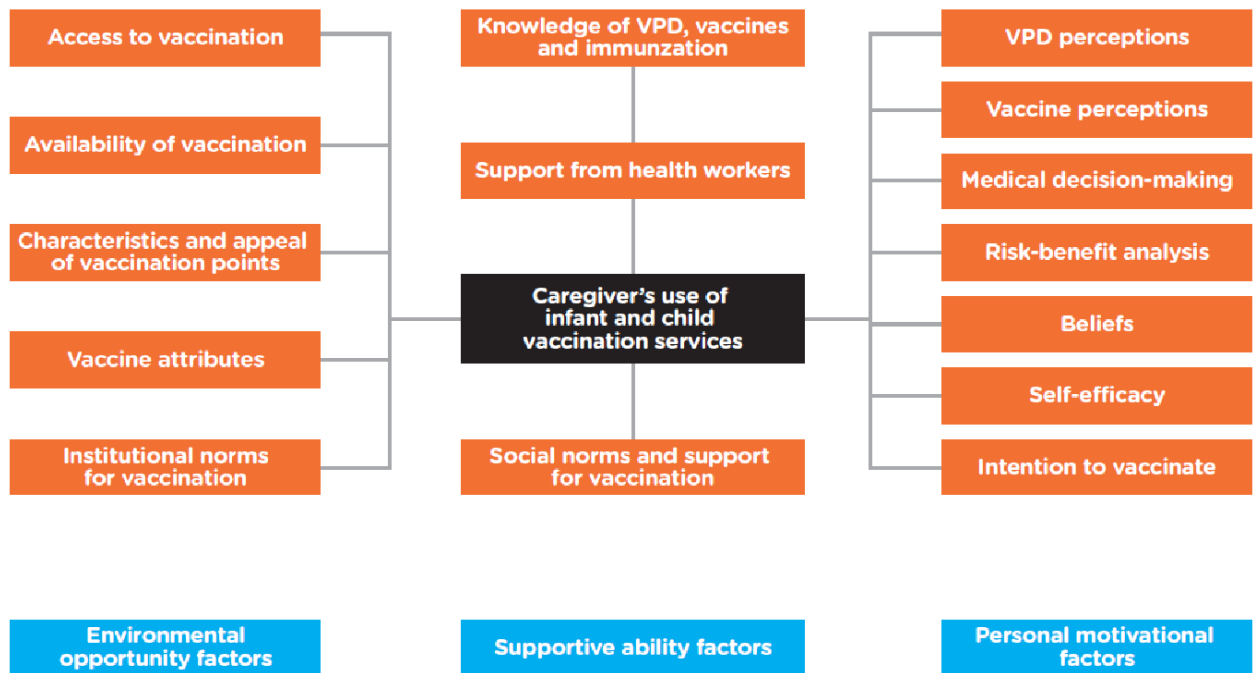


Figure 4. What influences health workers' practices with regard to childhood vaccination?



Considering the conceptual framework the following potential key topics was evaluated among primary caregivers and health service providers, including:

- Mothers (Primary caregiver)

- (1) Access to vaccination services;
- (2) Availability of vaccination services;
- (3) Characteristics and appeal of vaccination point;
- (4) Vaccine attributes;
- (5) Institutional norms;
- (6) Knowledge (factual, experiential and practical) of VPDs, vaccine and vaccination;
- (7) Social support for vaccination;
- (8) Parental VPD perceptions;
- (9) Parental vaccine perceptions;
- (10) Medical decision-making and trust;
- (12) Beliefs regarding vaccine safety;
- (13) Self-efficacy;
- (14) Intention to vaccine;
- (15) Risk-benefit analysis;

- Health Care Workers(HCWs)

- (1) EPI norms and standards
- (2) Availability of quality vaccines
- (3) Access to vaccination points

- (4) Facility procedures
- (5) Community engagement
- (6) Health workers' knowledge and experience
- (7) Supportive work environment
- (8) Socio-cultural/religious norms
- (9) Beliefs regarding vaccine safety
- (10) Attitudes regarding vaccines and vaccination
- (11) Perceived risks of VPDs
- (12) Perceived severity of VPDs
- (13) Self-efficacy
- (14) Risk-benefit analysis

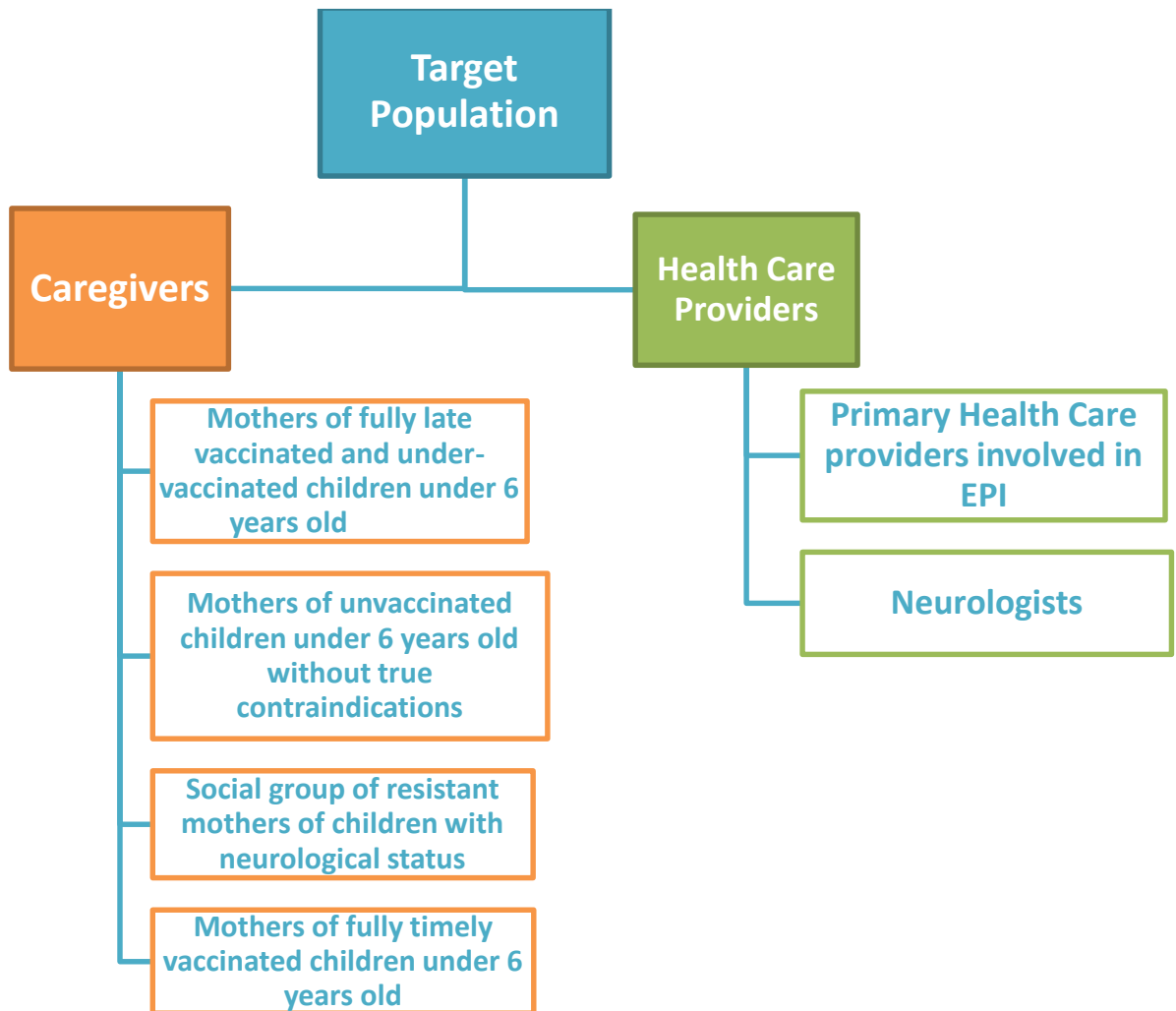
# 3

## Qualitative Survey

### 3.1. Qualitative Survey Methodology

From July to September 2016 qualitative survey with focus group (FG) methodology and in-depth interviews (Ind-I) was conducted to obtain information on immunization gaps/barriers from the caregivers and immunization providers (Figure 4) focusing of the key determinants that influence participation in infant and child vaccination including: 1.Environmental opportunity factors; 2. Supportive ability factors; 3.Personal motivation factors;

Figure 5. Target Population, Immunization KAP Survey, 2016





A series of 17 focus groups and in-depth interviews was conducted in three large cities with highest birthrate (2014 year birth cohort) in the country including Tbilisi, Kutaisi and Batumi, including FGs and In-depth interviews of mothers, FG of health care workers involved in EPI, FG of neurologists and In-depth interviews of Social group of resistant mothers of children with neurological status (Table 3).

**Table 3. Focus Group discussions participants and research sites, Immunization KAP Survey, 2016**

	Category of respondents	Place
<b>3FGs</b>	Mothers of fully timely vaccinated children under 6 years old	Tbilisi, Kutaisi, Batumi
<b>3FGs</b>	Mothers of fully late vaccinated and under-vaccinated children under 6 years old	Tbilisi, Kutaisi, Batumi
<b>1FGs and 4Ind-Interviews</b>	Mothers of unvaccinated children under 6 years old without true contraindications ( <i>according to national guidelines</i> )	Tbilisi, Kutaisi, Batumi
<b>2Ind-Interviews</b>	Social group of resistant mothers of children with neurological status	Tbilisi
<b>3FGs</b>	Primary Health Care providers involved in EPI	Tbilisi, Kutaisi, Batumi
<b>1FGs</b>	Neurologists	Tbilisi

### 3.1.1. Recruitment Procedures

Convenience sampling method was utilized to recruit and screen participants for FGs. Childs' immunization and health status and contact information of mothers of children less than 6 years was collected through primary healthcare physicians and national immunization database. Recruitment of physicians (family doctors involved in EPI and neurologists) occurred through the list of full-time employees obtained from the administration.

Participants were selected according to predefined screening criteria to increase representativeness of viewpoints and generalizability of obtained results. Each FGs included 8-10 participants.

#### **General Criteria:**

- (1) The selected persons for the participation in the focus group did not have to know each other, also the persons from the same locality are not recommended to participate at the same group discussions (only if there are specific requirements);
- (2) Qualitative research assistant did not recruit more than 10 person for each group discussion;

- (3) The persons invited at the FG were not allowed to be previously involved in other FG discussions within the same study;

***Specific Criteria:***

**Mothers' FG/Ind:**

- (1) Mothers of fully timely vaccinated children under 6 years old
- (2) Mothers of fully late vaccinated and under-vaccinated children under 6 years old
- (3) Mothers of unvaccinated children under 6 years old without true contraindications (according to national guidelines)
- (4) Social group of resistant mothers of children with neurological status

**Health Care Workers' FG:**

- (1) actively practicing physicians;
- (2) full-time employees of health care units;
- (3) pediatricians and family medicine physicians involved in the EPI;
- (4) Neurologists.

### **3.1.2. Data Collection Instruments**

***- focus group discussion/In-depth interview guides for each FG***

Focus group questions were open-ended, non-sensitive, and designed to maintain participant privacy and covered the following topics:

a) Preventive and immunization practices, b) Perception of HCWs and services, c) Vaccination decision-making Process, d) Perceptions about vaccination (anticipated risks vs. benefits), e) Knowledge and perceptions on VPDs (disease susceptibility, severity), and, f) Perceptions about drivers and preventing factors of immunization among stakeholders; g) trusted and untrusted sources of information on vaccination; h) communication and immunization consulting practices and skills of HCWs involved; i) in case of negative perceptions, farther exploration the reasons, and underlying issues/causes for the negative perceptions.

### **3.1.3. Data collection procedures**

***Focus group Discussion***

Focus groups were 75-90 minutes in duration and led by a moderator and supported by an assistant. All focus groups were conducted in private conference rooms and refreshments was provided. At the beginning of each group, trained facilitators/qualitative assistants used a scripted protocol to explain the purpose of the study and the ground rules for the focus group, including respect for diversity of opinion and confidentiality. The moderator used semi-structured interview guide to ensure that all topics of interest is covered during the interview. Interviewees were informed that all records would be destroyed after transcription of the discussions.

#### 3.1.4. Data Management and Statistical Analysis

FG sessions were audiotaped and professionally transcribed verbatim. A research assistant took notes during the focus groups. At the end of each FG sessions moderator and research assistant reviewed their notes and verbatim reports to make sure that they make sense in relation to the study questions. Comments or any observations made during the interview were also added and clarified. Study coordinator interviewed the interviewers/moderator to find out their experiences in the field. This de-briefing covered any problems encountered in administering the guide as well as any new themes or findings from the field.

Transcripts, audiotapes and notes from the focus groups were reviewed independently by two investigators. All surnames and other specific identifying information that might were inadvertently mentioned were deleted from the transcripts.

Content analysis techniques were utilized to develop coding categories and themes. Codes developed independently compared and discussed, and differences were reconciled. Through this iterative process a single coding system was developed, for phrases, sentences or paragraphs. The process of coding and development of themes was inductive in nature.

#### 3.1.5. Ethical considerations and protection of human subjects

Approval to conduct the research was obtained from the local ethical review committee. Research staff received short training in informed consent and principles of ethical research. Individual, written informed consent was obtained from participants on-site immediately before joining the focus groups. Permission was obtained from respondents to tape-record focus group discussions with provisions and assurances made for confidentiality.

#### 3.1.6. Quality Assurance

There was employed a series of measures to ensure the high quality of conducted qualitative research, including:

##### ***Conceptual framework***

The use of a conceptual framework and stated research objectives guided the development of sampling strategies and data collection instruments to ensure data dependability (the equivalent of reliability for qualitative data).

##### ***Research Team Competence***

Research teams were constructed to ensure that data was gathered, prepared, and analyzed by researchers familiar with the different research topics covered in the study and with target communities.

##### ***Trainings***

Research team received intensive training in qualitative research, including data elicitation methods, clarity on information that would be gathered, documentation and recording, and procedures for conducting quality control checks during data collection.

#### ***Pilot-testing***

Pretesting of data collection tools and methods was also carried to guaranty effectiveness of data collection instruments.

#### ***Debriefing***

Regular debriefings among team members were held in the field and throughout the data analysis process to check the validity of the data and enable researchers to make corrections in the field as needed.

## **3.2. Results**

### **3.2.2. Socio-demographic characteristics of qualitative survey participants**

In total 60 participants were recruited for focus group discussions and in-depth interviews, specifically 19 (30.5%) mothers from Tbilisi, 17 (28.8%) from Batumi and 24 (40.7%) from Kutaisi study sites. In total more than half (53%) of participants were representing group with fully timely vaccinated children under 6 years old, 29% were mothers of fully though late vaccinated and under-vaccinated children under 6 years old, while the rest 18% were the mothers of unvaccinated children.

Mother's group was represented by women of mean age 32.6 (SD- 7.2). Majority of participants was married in monogamous relationship (98%), had university education (61%) and were Orthodox Christians (93%). Less than half were employed (34%) and were receiving social support from the government (20%). Among employed participants only 18 agreed to provide information about their income which accounted 841.8GEL mean monthly income. Participant mothers had a mean of two children (range 1-5), of mean age 32 months (range from 3 month - 6years). The mean time required for mothers to get to their children's immunization center was 25.20 minute. The most frequently named media channel used as a source of information on immunization was named internet, followed by television and only few of participants mentioned radio and printed media.

In total 33 HCWs participated in Focus Group discussions with mean age 55 (Std. 9.3).Physicians' Focus Group was mainly represented by pediatricians (66.7%), absolute majority were women and had ten or more work experience in the field (93.9%) and 75.8% reported to have on average more than 30 patients a month. 48.5% of physicians were employed at health care facilities located in Tbilisi (capital city of Georgia) and 51.5% reported to have received continuing medical education training during last 6 months.

### 3.2.1 Observational findings:

In all three research sites including Tbilisi, Batumi and Kutaisi recruitment of participants for the qualitative survey revealed an important trend; specifically stakeholders potentially being resistant to immunization were more likely to categorically disagree to participate in the qualitative survey or did not come on the survey despite prior approval. Those potentially resistant stakeholders included mothers of unvaccinated children under 6 years old without true contraindications (according to national guidelines), Primary Health Care providers involved in EPI serving in low vaccine coverage settlements and representatives of social group of resistant mothers of children with neurological status. In contrast mothers of vaccinated children and Primary Health Care providers from high vaccine coverage settlements were eager to participate in the focus group discussions and were very active to share with their experience and knowledge about immunization related issues.

Considering identified challenges in recruitment and activity of resistant participants the original plan to conduct focus group discussions among resistant groups of immunization stakeholders was changed and in two research sites (including Tbilisi and Kutaisi) in-depth interview methodology was utilized to collect the data among resistant mothers instead of FGs.

### 3.2.2. Main Finding

Quality of vaccine of vaccine was named by all stakeholders as one of the important factors for caregivers to make decision about vaccination and from the other hand physician to be self-confident while persuading caregiver to give vaccine to the child. The sign of the quality of vaccine was defined as the vaccine manufacturer country; specifically manufacturers from west European countries were given the highest credit and considered as the guaranty of the product quality. According to Primary Health Care providers involved in EPI one of the reasons for decreasing cases of vaccine refusals during last years from their clinical practice was the fact that vaccines provided through immunization program are manufactured in Europe. The problem of so called “free” (government purchased) and “paid” (commercial vaccines) vaccines identified during the UNICEF and NCDC 2012 survey on immunization was no more a problem considering the fact that currently provided vaccines are the same good quality as commercially imported vaccines available on Georgian market.

Some groups of health care workers were still named as the source of concerns and resistance among caregivers including those specialists practicing in hospitals and also “famous” pediatricians. Moreover according to all stakeholders one of the immunization resistant groups of caregivers was health care providers themselves. This trend was named by Primary Health Care providers involved in EPI as one of the important issues considering the fact that those groups usually have trust from the general population and their choice might influence on others.

According to stakeholders Orthodox Christianity as a religion was not against immunization in general and there were few cases when priests would give negative recommendation on vaccination. However there were a lot of cases when priests do not vaccinate their children again giving “bad” examples to their parish even without actively discrediting the immunization in their preaches.

Young caregivers were identified through the qualitative survey and also were reported (by Primary Health Care providers involved in EPI) to be more informed, active in child immunization compared to older caregivers. Though young caregivers were also the one who Primary Health Care providers involved in EPI find most difficult to communicate due to lower “respect” and “trust” toward their competence and provided information during the consultations. They were also named as the most employed and busy group due to which they often had to postpone the immunization.

Resistant caregivers differed in their argumentation and general background. The most frequent reasons for refusals was named the potentially vaccine associated neurologic reactions in the child or their older siblings and neurological or allergic status of the child. The fear for neurologic complications after administration of vaccine was also named as the important barrier for other groups of caregivers. Caregivers from rich or so called celebrity families were also named as one of the resistant groups though with no specific argumentation against vaccination.

According to Neurologists their role and involvement in immunization has decreased and all FG participants insisted that are pro vaccination and rarely give negative recommendation to vaccination. However Primary Health Care providers involved in EPI still named the source of immunization related concerns among caregivers.

Focus group discussions among Primary Health Care providers involved in EPI revealed lack of trust and high fear of complications after the vaccination. They still reported to prescribe medication against allergy and fever before immunization to prevent any complications among their pediatric patients.

Discussions on HPV vaccination revealed low knowledge about vaccine and their importance for cancer prevention among caregivers. Though Primary Health Care providers involved in EPI were in general more informed about HPV vaccine those from regions were more interested and willing to recommend vaccine and give vaccine to their family members than Primary Health Care providers involved in EPI from Tbilisi.

### **3.2.3. Results**

#### **Health care worker issues related to vaccination**

- **Environmental opportunity factors**

#### ***EPI norms and standards***

#### ***Availability of quality vaccines***

According to majority of focus group participant HCWs involved in EPI vaccine coverage for recent years has increased in their catchment area (settlement and population assigned to the specific HCW involved

in EPI). Availability of high quality vaccines with increased awareness about immunization among caregivers was named in three research setting, including Batumi (with the best vaccine coverage profile), Kutaisi and Tbilisi as two the most important reasons for improved immunization coverage in their regions.

There was no agreement between participants regarding the criteria for the quality, though the vaccine manufacturer country and commercial vaccines used to be introduced by private sector were still considered both by HCWs and caregivers as important issue.

### ***Access to vaccination points***

#### ***Facility procedures***

- **Supportive ability Factors**

#### ***Community engagement***

#### ***Health workers' knowledge and experience***

#### ***Supportive work environment***

#### ***Socio-cultural/religious norms***

- **Personal motivation factors**

#### ***Beliefs regarding vaccine safety***

#### ***Attitudes regarding vaccines and vaccination***

#### ***Perceived risks of VPDs***

#### ***Perceived severity of VPDs***

#### ***Self-efficacy***

#### ***Risk-benefit analysis***

## 4

## Quantitative Survey

### 4.1. Methodology

Cross-sectional survey was conducted among primary caregivers (e.g. mothers, if not available other legal representatives) of 2-year-old children (birth cohort 1/1-12/31/2014) representing the one of the three target cohorts of the “immunization coverage survey” 2015. Selection of the 2015 birth cohort was based on the rationale to capture the most recent data on the existing gaps in the immunization system in the country. Interviewer-administered questionnaires were used to assess caregiver’s knowledge, beliefs, and practices regarding immunization. Additionally official immunization status information was collected from the local immunization provider clinics on the selected research participants, including information about which vaccines were provided and the date of the vaccination.

Selection of research sites was based on the rationale to include settlements with:

- highest birthrate and geographic distribution of children in the selected birth cohort (population density);
- diverse vaccine coverage statistics (Indicator DTP3 - diphtheria, tetanus & pertussis) according to official Immunization coverage estimates and recently conducted coverage survey data;
- Wider variety of the communication channels. In villages according to the preliminary studies the main source of the information remains the HCW, while in the big cities population have more access to the other sources of information including TV, internet and social media;

Accordingly three big cities were selected, including Tbilisi, Kutaisi and Batumi which account more than 40% of the targeted birth cohort.

The questionnaires were based on the qualitative survey results, Parent Attitudes about Childhood Vaccines (PACV) survey and the HealthStyles survey<sup>9</sup>. The PACV survey contains questions (15 items) answered on a 3-point scale (Yes, No and Don’t Know), within 3 domains: behavior, safety and efficacy, and general attitudes. The eight items from the HealthStyles survey questions were adopted from the previous analysis conducted by Gust et al. for immunization attitudes and beliefs among parents, using a 5-point scale (Strongly Disagree, Agree, Neutral, Slightly Disagree and Strongly Disagree).

All instruments were developed in collaboration with local experts (including immunization, pediatrics, infection disease, preventive medicine and public health) and addressed multiple domains. To ensure clarity and ease of administration the questionnaire were pilot-tested on a convenience sample of caregivers from Tbilisi.

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<sup>9</sup> Gust D, Brown C, Sheedy K, Hibbs B, Weaver D, Nowak G. Immunization attitudes and beliefs among parents: beyond a dichotomous perspective. *Am J Health Behav* 2005;29(1):81–92.



- . The quantitative questionnaire is comprised of 7 modules, Including:
  - (1) Socio-demographic data (respondent’s age, sex, income, etc.);
  - (2) Immunization status data, which included 4 items: complete vaccination status, timeliness, uptake of commercial vs. government purchased vaccines and usage of medication before administration of vaccine.
  - (3) Immunization practices (including 7 items of immunization related behavior);
  - (4) Immunization believes (including 15 items on importance, safety and efficacy perceptions);
  - (5) Trust toward health care workers (including 7 items);
  - (6) Source of information on immunization;
  - (7) Additional questions on Human Papilloma Virus vaccination (including 6 items).

The cohort representatives’ official immunization status was assessed using the data collected from immunization record identified at vaccine provider clinics. Decision was made to look at the following vaccines to assess official immunization status: BCG, diphtheria, tetanus, and acellular pertussis; inactivated poliovirus; measles, mumps, and rubella; *Haemophilus influenza* type b (HIB); hepatitis B. We chose not to include rotavirus and pneumococcal vaccines because they were relatively recent addition to the schedule recommended by the National Immunizations Schedule.

#### 4.1.1. Sampling methodology and procedures

The lists of children born in 2014 (1/1-12/31/2014) from the Civil Registry data base linked to the IMM will be used as a sampling frame for the survey. Selection of participants will be performed by simple random sampling.

##### Sample size calculation

The sample size was calculated with Epi-info stat-calculator for population survey using standard parameters: the level of confidence 1.96, margin of error (confidence limit) 0.05 and baseline level of the indicators 0.80 (assuming 80% vaccine coverage estimate), minimum sample of 695 caregivers is required for the survey.

Based on the results of the national wide immunization coverage survey, we expected to obtain information from at least 80% of children caregivers. The final number of participants targeted for each city after incorporating the 20% non-response rate was 300 for Tbilisi, 250 for Batumi and Kutaisi in each, which account for 800 respondents in total.

**Table 4. Numbers of participants (based on birthrate estimates) by location and sample sizes targeted for the Immunization KAP Survey, 2016**

Site	Number of children in	Sample size per city	Sample size targeted, with 20% non-response	Population agreed to participate in the survey

<b>Tbilisi</b>	20,121	243	300	265
<b>Kutaisi</b>	2,636	225	250	224
<b>Batumi</b>	2,927	227	250	248
<b>Total</b>	25,684 (Out of 60,497**)	695	800	<b>737</b> <b>(Response Rate=92%)</b>

\* Civil Registry data base, 2014 birth cohort, data from June, 2016

\*\*Children with unknown addresses and living abroad or occupied territories are excluded from the total number (0.28%).

#### List of Inclusion Criteria

- (1) Mother of live child from 2014 birth cohort
- (2) Other caregiver (parent, grandparent, relative or other legal representative) if mother not available, including mothers who are:
  - not a primary caregiver (e.g. not leaving with children, no legal caregiver anymore, etc.)
  - deceased
  - with serious medical condition (e.g. mental health disorders, unconscious, etc.)
  - not in the country
- (3) During the survey period lives in the targeted research site (Tbilisi, Kutaisi or Batumi);

#### **4.1.2. Data collection procedures**

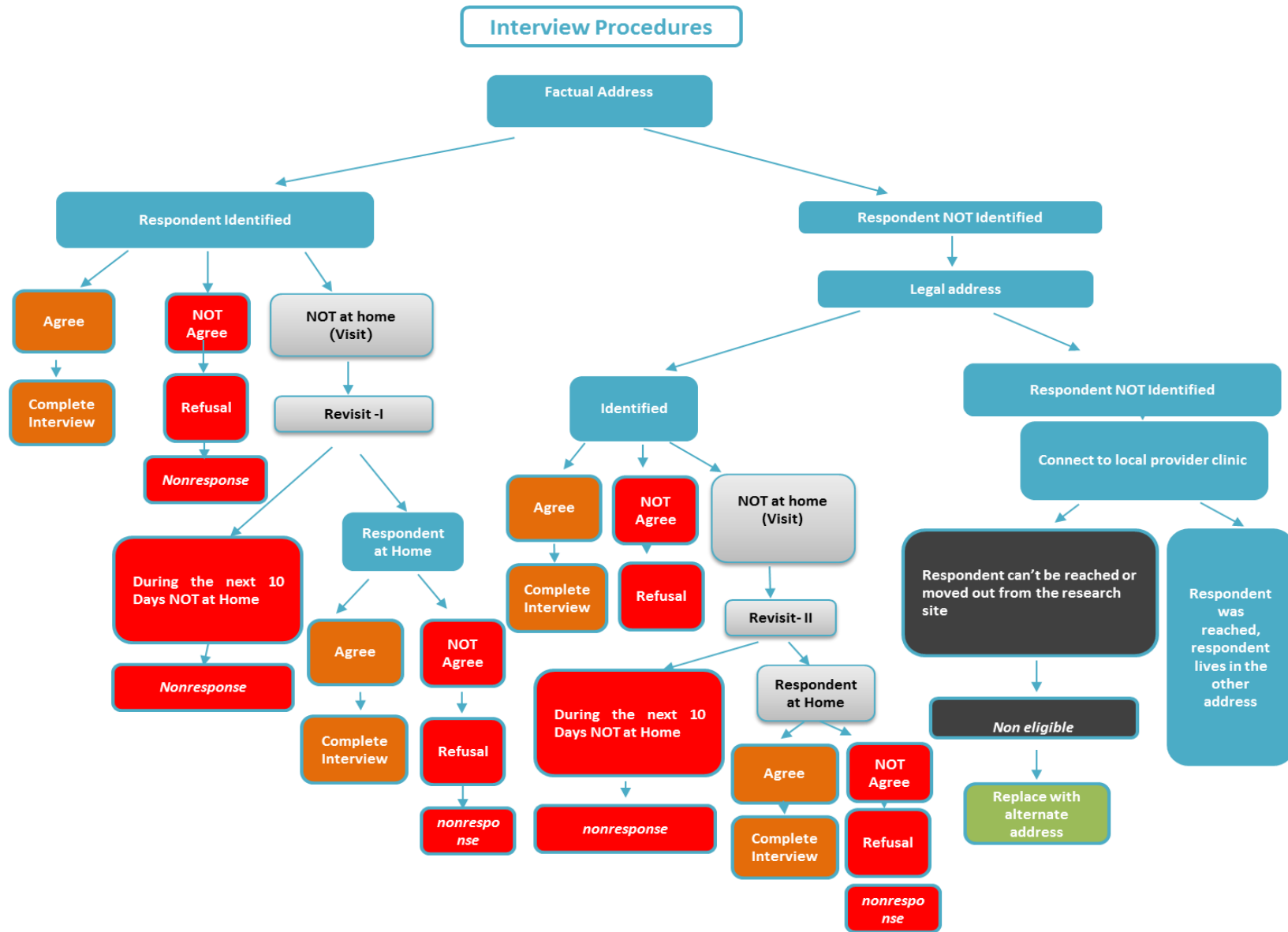
##### Household Interviews

Interviewers conducted calls (if the number was available from the immunization database and was correct) and home visits to the provided address (from civil registry database and health care facilities where the child is registered) of the selected primary caregivers and offered eligible caregivers to participate in the study (Fig 5). Brief oral and written description of the purpose and objectives of the study was provided and verbal consent was obtained from prospective participants before administration of standardized questionnaire to complete at pre-arranged times. Each day each interviewer conducted up to 4 interviews. Interviewers entered the data directly in the Epi-info database installed on Samsung Android Tablets (though they were also provided with paper forms for data collection in case of technical issue). For the quality insurance all interviewers were provided with training. For monitoring purposes the calls to the random sample of participants were conducted by the quantitative manager during the survey.

### Facility interviews

Interviewers also conducted visits to the vaccine provider clinics to obtain official immunization status information from the documentation available in the clinics. Information about vaccines and the dates of their administration were entered in the paper forms and later in the Epi-info database. At the end of the survey two databases from household interviews and official immunization status forms was merged for final analysis.

Figure 6. Quantitative survey participant recruitment flowchart, Immunization KAP Survey, 2016



### 4.1.3. Data Management and Statistical Analysis

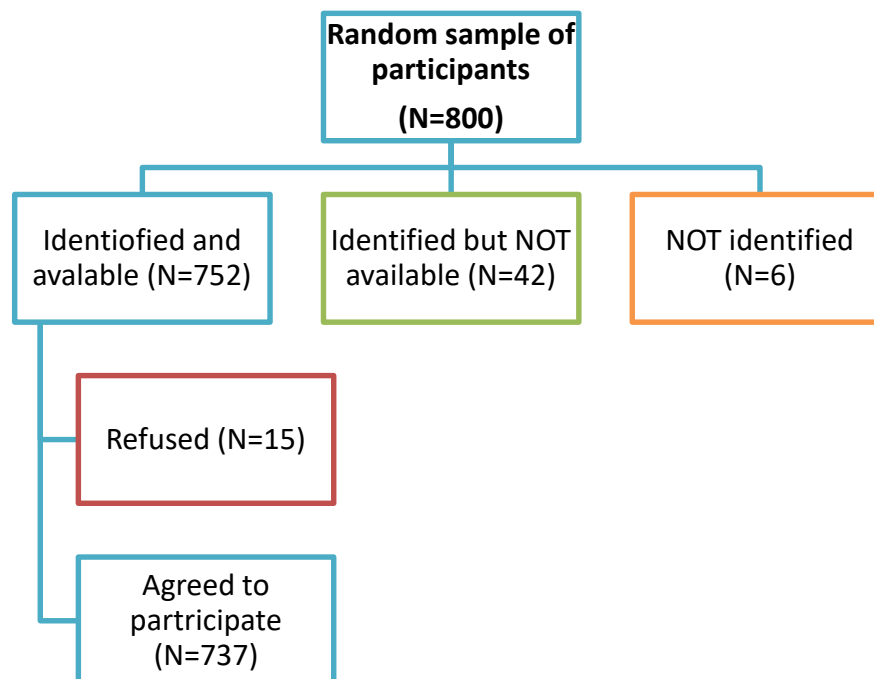
Data was entered and verified in Epi-info. Data management and quantitative statistical analysis was conducted using Epi-info and SPSS software. Data quality assessments were conducted before analysis is performed. Descriptive, bivariate and multivariate analysis was performed to assess major factors correlated with vaccine coverage in the target population.

## 4.2. Results

Quantitative survey field work including household interviews and visits at provider clinics for immunization official status data collection took place from 7 of November till 15 of December in Batumi (7-17 November), Kutaisi (20-30 November) and Tbilisi (3 -15 December).

From the randomly selected 800 participants 752 (94%) were identified and available (reached respondents), 42 (5.3%) were identified though not available during the survey period and 6 (0.8%) were not identified on the addresses extracted from electronic databases or immunization provider clinics' data. From 752 respondents who were reached 737 (Response Rate=92%) agreed to participate in the survey (Fig 5).

Figure 7. Flowchart of participant's involvement in the survey.



### 4.2.1. Demographic Data

Respondents from each three research sites were equally representing, including 248 respondents from Batumi (248/250 Response rate 99.2%), Kutaisi 224 (224/250 Response Rate 89.6%) and Tbilisi (224/250 Response Rate 88.3%)

Almost all survey respondents represented child's parent (94%), were female (95%), were equally represented in 18-29 and 30-39 age groups (46% and 44% respectively), Georgian (94%), Orthodox Christian (95%), were currently married (98%), had university/college education (70%), lived in their own apartment (96%) in the families with on average 5 members older than 18 years and 2 children and never been internally displaced due to the wars (99%).

More than half of participants were currently unemployed (60%), on average had 2 person in a household who would have an income. On the question about household income only 200 (out of 737) participants provided information based on which the average monthly household income accounted to 1073 GEL a month (Table 5).

There was identified significant difference in immunization status among three research site cohort representatives, Batumi having the lowest numbers of not fully vaccinated children (44%), followed by Tbilisi (59.2%) and Kutaisi (61.2%). There was no other significant difference of immunization status of participants considering other socio-demographic characteristics, though child cohort male representatives had slightly worst vaccine coverage estimates being more fully unvaccinated compared to females (56.9% and 52.9% respectively), children of respondents 30-39 years age group were more unvaccinated compared to other two groups of 18-29 and over 40 years of age respondents (56.8%, 53.4% and 52.8%, respectively). Not significant though relatively worst vaccine coverage estimates were also identified among respondents of ethnical minority group representatives (except for Armenians), Orthodox Christians, with completed Post-graduate degree, those who currently are not in marital relationships, students and unemployed respondents, respondents who rent a house and had been forced to move from your house because of war or civil unrest (Table 5).

**Table 5. Socio-Demographic characteristics of respondents, Immunization KAP Survey, 2016**

Characteristics	Total		NOT Vaccinated*	Fully Vaccinated	P**
	N	(%) / (Mean)	(%) / (Mean)	(%) / (Mean)	
<b>Study Site</b>					
<b>Batumi</b>	248	33.6%	44.0%	56.0%	0.000
<b>Kutaisi</b>	224	30.4%	61.2%	38.8%	
<b>Tbilisi</b>	265	36.0%	59.2%	40.8%	
<b>Respondent represent child's:</b>					
<b>Parent (mother/father)</b>	693	94.0%	55.0%	45.0%	0.312
<b>Other family member 18 years old and over</b>	44	6.0%	50.0%	50.0%	
<b>Relative</b>	---	---	---	---	
<b>Other legal representative</b>	---	---	---	---	
<b>Child Sex</b>					

<b>Male</b>	348	48.1%	56.9%	43.1%	<i>0.159</i>
<b>Female</b>	376	51.9%	52.9%	47.1%	
<b>Respondent Sex</b>					
<b>Male</b>	35	4.8%	48.6%	51.4%	<i>0.293</i>
<b>Female</b>	696	95.2%	54.7%	45.3%	
<b>Age</b>					
<b>18-29</b>	337	46.0%	53.4%	46.6%	<i>0.638</i>
<b>30-39</b>	324	44.2%	56.8%	43.2%	
<b>40 &gt;</b>	72	9.8%	52.8%	47.2%	
<b>Ethnicity</b>					
<b>Georgian</b>	691	94.0%	54.4%	45.6%	<i>0.729</i>
<b>Armenian</b>	14	1.9%	42.9%	57.1%	
<b>Azeri</b>	3	0.4%	66.7%	33.3%	
<b>Ossetian</b>	2	0.3%	100.0%	0.0%	
<b>Russian</b>	14	1.9%	57.1%	42.9%	
<b>other</b>	10	1.4%	60.0%	40.0%	
<b>DNK</b>	1	0.1%	100.0%	0.0%	
<b>Religion</b>					
<b>Orthodox Christian</b>	699	95.8%	54.9%	45.1%	<i>0.205</i>
<b>Jewish</b>	1	0.1%	0.0%	100.0%	
<b>Muslim</b>	21	2.9%	33.3%	66.7%	
<b>Not religious</b>	8	1.1%	50.0%	50.0%	
<b>Other</b>	1	0.1%	100.0%	0.0%	
<b>Education</b>					
<b>No formal schooling</b>	---	---	---	---	<i>0.753</i>
<b>Completed less than Elementary school</b>	---	---	---	---	
<b>Completed Elementary school (Grades 1-6)</b>	---	---	---	---	
<b>Completed Primary school (Grades 7-10)</b>	25	3.4%	52.0%	48.0%	
<b>Completed Secondary school (Grades 11-12)</b>	142	19.3%	56.3%	43.7%	
<b>Completed Professional/Technical school</b>	48	6.5%	47.9%	52.1%	
<b>Completed University/College</b>	514	69.8%	54.7%	45.3%	
<b>Completed Post-graduate degree</b>	7	1.0%	71.4%	28.6%	
<b>Marital Status</b>					

<b>Never married</b>	1	0.1%	0.0%	100.0%	0.336
<b>Currently married</b>	719	98.1%	54.2%	45.8%	
<b>Separated</b>	6	0.8%	66.7%	33.3%	
<b>Divorced</b>	2	0.3%	100.0%	0.0%	
<b>Widowed</b>	5	0.7%	80.0%	20.0%	
<b>Living with partner</b>	---	---	---	---	
<b>Employment Status</b>					
<b>Government employee</b>	79	10.8%	58.2%	41.8%	
<b>Non-government employee</b>	138	18.9%	56.5%	43.5%	
<b>Self-employed</b>	47	6.4%	48.9%	51.1%	
<b>Non-paid worker (ex. volunteer work, childcare, homemaker or elder care for family members)</b>	---	---	---	---	
<b>Student</b>	15	2.1%	66.7%	33.3%	
<b>Retired</b>	9	1.2%	44.4%	55.6%	
<b>Unemployed (able to work)</b>	441	60.3%	53.5%	46.5%	
<b>Unemployed (unable to work)</b>	2	0.3%	100.0%	0.0%	
<b>Household Monthly Income</b>	200	1073.0	1080.9	1063.6	
<b>How many people earn money in your household?</b>	648	1.71	1.72	1.70	
<b>Have you ever been forced to move from your house because of war or civil unrest?</b>					
<b>Yes</b>	10	1.4%	80.0%	20.0%	0.99
<b>No</b>	722	98.6%	54.8%	45.2%	
<b>Does your family rent, or own the house you live</b>					



in?					
<b>Rent</b>	14	1.9%	57.1%	42.9%	0.472
<b>Own</b>	699	96.3%	55.4%	44.6%	
<b>Other</b>	13	1.8%	38.5%	61.5%	
<b>How many people older than 18 years, including yourself, “live permanently” in your household?</b>	736	4.84	4.89	4.78	
<b>How many children under 18-year-old “live permanently” in your household?</b>	732	1.97	2.09	1.82	

#### 4.2.2. Immunization Status Data

##### *Immunization Status Data by Caregivers*

According to 79.8% of respondents their child (2014 birth cohort representative) was completely vaccinated (all vaccine shots recommended by the National Immunization Calendar), according to 16.4% their child had been provided with at least one vaccine shot after BCG/HepC vaccination at maternity hospital, according to 2.7% their child were provided only BCG/HepC vaccination at maternity hospital and 1.1% reported that their child was not vaccinated at all.

More than half of respondents (62.4%) said that their child were provide with vaccination timely, one third (27.1%) reported to have delay and the rest few (0.4%) respondents were not sure or did not know whether their child was provided with immunization timely or not.

A big majority of respondents (90%) reported that their child were vaccinated with government purchased vaccines (so called “free vaccines”), 8.8% reported to have their child vaccinated with commercial vaccines (so called “paid vaccines”) and only 1.1% did not remember or was not aware which vaccines were their child provided.

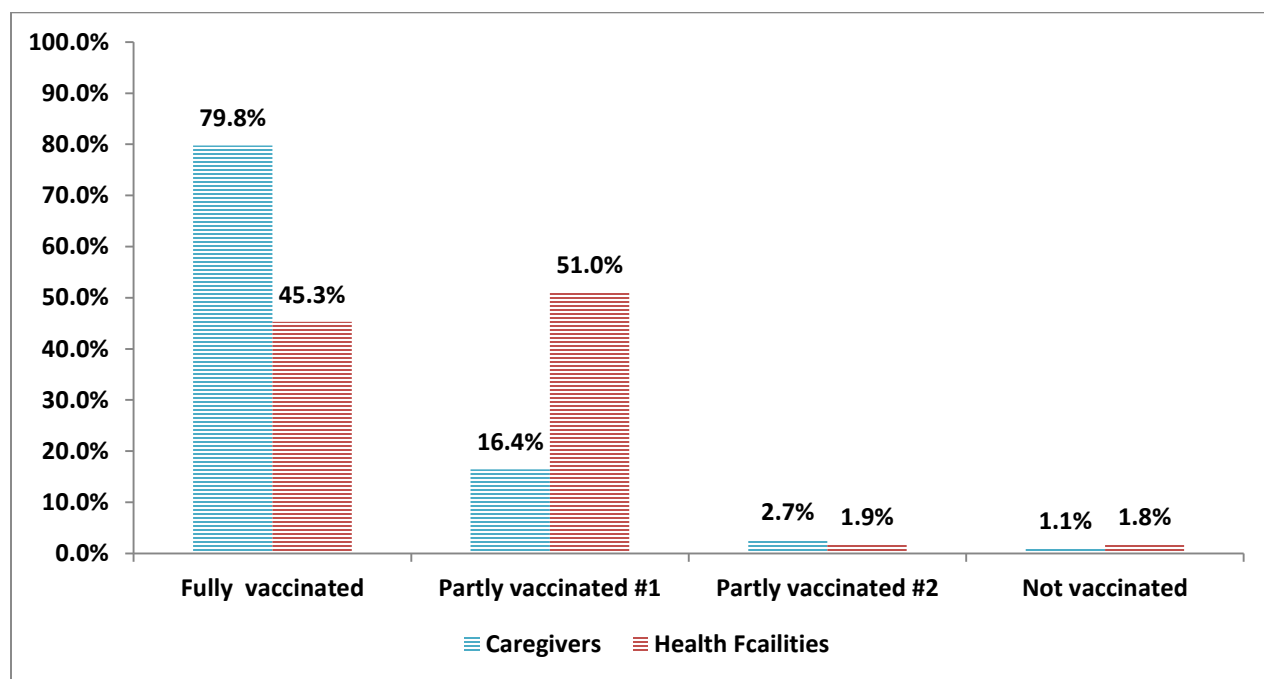
On the question if they provided any medication to their child before vaccination 77% respondents reported not to have given any medicine, 20% respondents provide some medication with a physicians’ recommendation and 2% without recommendation and only 0.7% did not remember such facts.

##### *Immunization Status Data by Health facilities*

Immunization status was identified through small scale coverage survey in health facilities for all children (737) whose caregivers agreed to participate in the survey. Immunization status data was also extracted for some of those who refused to participate in the survey (14 out of 15) and those who were not reached during the survey period (37 out of 48).

Based on the data collected at vaccine provider clinics only 45.3% of children (2014 birth cohort representatives who agreed to participate in the survey) was completely vaccinated (all vaccine shots recommended by the National Immunization Calendar), 51.0% of children had been provided with at least one vaccine shot after BCG/HepC vaccination at maternity hospital (partially vaccinated type #1), 1.9% of children were provided only BCG/HepC vaccination at maternity hospital (partially vaccinated type #2) and 1.8% reported that their child was not vaccinated at all. Respectively only 60.7% of caregivers provided correct data regarding child's full immunization status (Child was fully immunized according to both sources).

**Figure 8. Immunization status two sources (caregivers and health facilities ), Immunization KAP Survey, 2016**

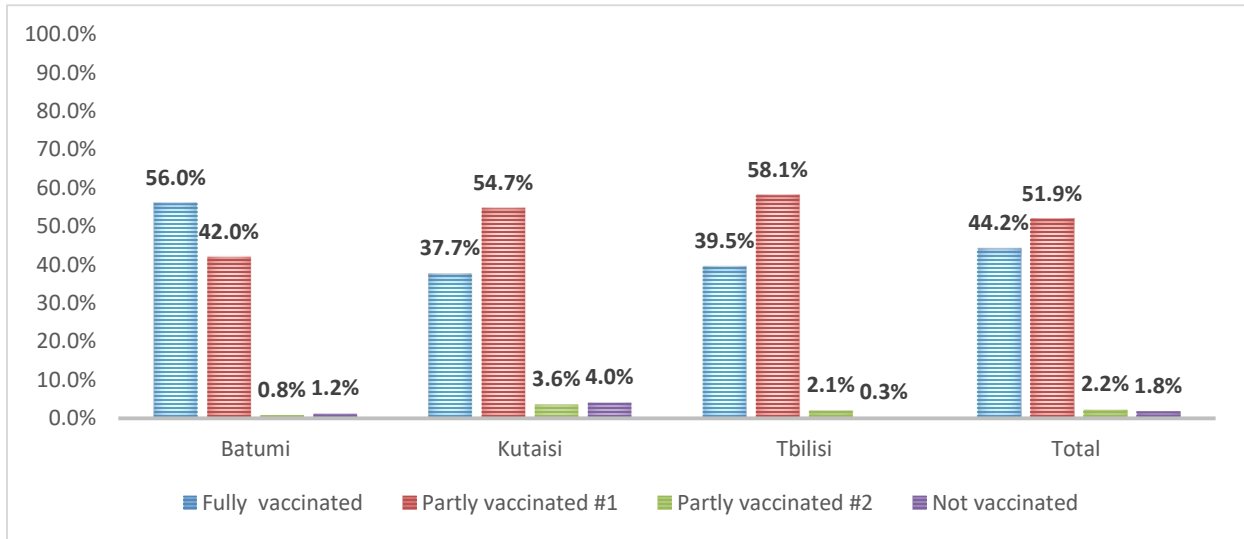


*\*Partially vaccinated #1 - Child is provided with one or more vaccination after BCG/HepB0 vaccination at maternity hospital*

*\*\*Partially vaccinated #2 - Only BCG/HepB0 Vaccination at maternity hospital*

Official vaccination status Differed in three sites, specifically for 788 of survey sample representatives (including all selected cohort representative on which official data was extracted) the official fully vaccinated status was assigned to 44.2% of study sample participants in total, for Batumi site 56.0%, Kutaisi site 37.7% and Tbilisi site 39.5% (Fig 7).

**Figure 9. Official immunization status by regions (N=786), Immunization KAP Survey, 2016**

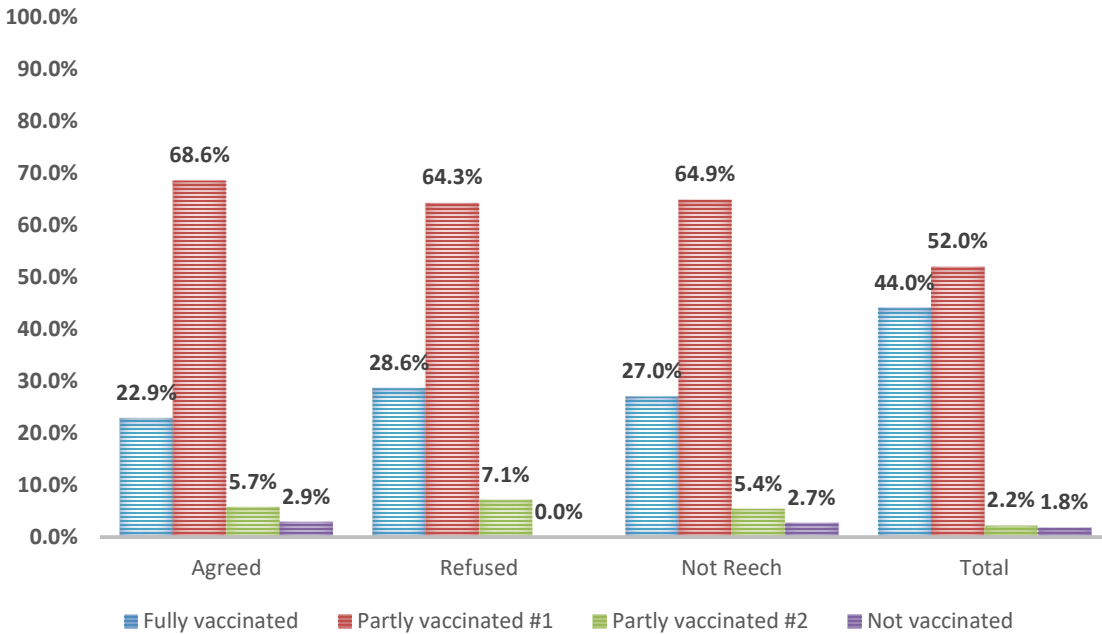


*\*Partially vaccinated #1 - Child is provided with one or more vaccination after BCG/HepB0 vaccination at maternity hospital*

*\*\*Partially vaccinated #2 - Only BCG/HepB0 Vaccination at maternity hospital*

Among those who refused to participate in the survey 4 (28.6%) were fully vaccinated, 8 (60.0%) partially vaccinated type#1 and 1 (7.7%) partially vaccinated type #2. As for the children whose caregivers were not reached, 10 (27.0%) were fully vaccinated, 24 (64.9%) partially vaccinated type #1, 2 (5.4%) partially vaccinated type #2 and only 1 (2.7) were not vaccinated at all (Fig 8).

**Figure 10. Official immunization status of survey sample (N=786), Immunization KAP Survey, 2016**



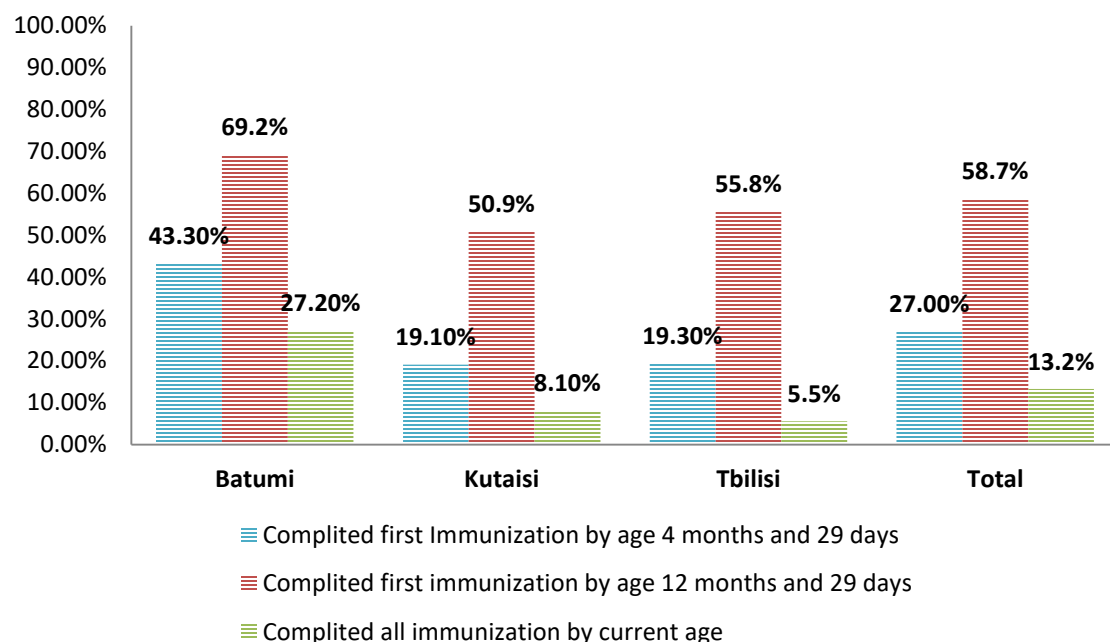
*\*Partially vaccinated #1 - Child is provided with one or more vaccination after BCG/HepB0 vaccination at maternity hospital*

*\*\*Partially vaccinated #2 - Only BCG/HepB0 Vaccination at maternity hospital*

Official data differed regarding timeliness of child immunization. From all survey sample representatives (including 788 all selected cohort representative on which official data was extracted) only 13.2% of children were provided with vaccination timely (All vaccine shots according to their age defined by National Immunization Calendar), 86.5% had delayed vaccination and 0.3 did not know. The given data was the same for the participants who agreed to participate in the survey (13.7%, 86.2 and 0.1% respectively). While compared to the respondent submitted information only 38% of caregivers appeared to provide correct data regarding child's immunization timeliness (Child was timely immunized according to both sources).

From all survey sample representatives (including 788 all selected cohort representative on which official data was extracted) by age of 4 months and 29 days 27.0% of children and by age of 11 months and 29 days 58.7% of children completed the first immunization. Given data differed by the research sites, specifically Batumi had the highest proportion of the survey cohort representatives who completed the first immunization by age of 4 months and 29 days compared to Batumi and Tbilisi representatives (43.3% vs. 19.1% vs. 19.2%, respectively), Batumi representatives had also had three time and more as better results on immunization coverage by the current age (child is provided with all vaccine shots according to their age defined by National Immunization Calendar) (Fig 9).

**Figure 11. Immunization Timeliness Data by Research Region (N=786), Immunization KAP Survey, 2016**



According to official data only 3 children out of 729 (0.4%) were diagnosed with severe neurological disease.

**Table 6. Child Immunization status, Immunization KAP Survey, 2016**

Characteristics	Immunization Status			
	Caregiver's Data*		Official Data**	
	N	(%) / (Mean)	N	(%) / (Mean)
<b>Immunization status</b>				
<b>Child has no vaccine</b>	8	1.1%	13	1.8%
<b>Partially vaccinated #1 Child is provided with one or more vaccination after BCG/HepB0 vaccination at maternity hospital</b>	121	16.4%	376	51.0%
<b>Partially vaccinated #2 Only BCG/HepB0 Vaccination at maternity hospital</b>	20	2.7%	14	1.9 %
<b>Fully vaccinated</b>	588	79.8%	334	45.3%
<b>Immunization was provided timely (All required immunization was</b>				

<b>completed by the age of 18 months and 29 days)</b>				
<b>Yes</b>	499	69.4%	165	23.4%
<b>No</b>	217	30.2%	540	76.6%
<b>DNK</b>	3	0.4%	0	0%
<b>First immunization was completed by the age of 4 months and 29 days</b>				
<b>Yes</b>	----	----	199	28.2%
<b>No</b>	----	----	507	71.8%
<b>First immunization was completed by the age of 11 months and 29 days</b>				
<b>Yes</b>	----	----	425	60.2%
<b>No</b>	----	----	281	39.8%
<b>Child was provided with commercial so called “paid” vaccine</b>				
<b>Yes</b>	64	8.8%	----	----
<b>No</b>	656	90.0%	----	----
<b>DNK</b>	9	1.2%	----	----
<b>Child was provided with medication before vaccination</b>				
<b>Yes, with recommendation of doctor</b>	146	20.0%	----	----
<b>Yes, without recommendation</b>	18	2.5%	----	----
<b>No</b>	560	76.8%	----	----
<b>DNK</b>	5	0.7%	----	----
<b>Child was officially been diagnosed with neurological disease</b>				
<b>Yes</b>	----	----	3	0.4%
<b>No</b>	----	----	724	99.3%
<b>DNK</b>	----	----	2	0.3%

\*Immunization status data collected from child’s caregiver.

\*\*\*Immunization status data collected from the immunization provider clinics.

### 4.2.3. Immunization Practices

Participants of the survey were asked regarding their child immunization practices. Almost half of the respondents (45%) reported to have delayed and only 9% reported to have refused having their child get a shot for reasons other than illness or allergy.

Caregivers were highly ensured (with mean score of 9 out of 10) that following the recommended shot schedule is a good idea for their child and more than 80% did not consider themselves hesitant about childhood shots.

More than half of respondents (67%) disagreed or strongly disagreed that it is their role as a parent to question vaccine shots and big majority (93%) agreed that if they had another infant today, they would want him/her to get all the recommended vaccine shots.

When asked about their child future vaccination plans majority of respondents either reported to have their children fully vaccinated (48%) or plan to provide all recommended vaccines (47%). Only 1.2% planned to provide child with some but not all recommended vaccines and 1.8% had no plans to vaccinate their child in the future.

Immunization practices differed in two groups of survey respondents, including Not fully and fully vaccinated child's caregivers. Almost twice as more of the representatives of not fully vaccinated child caregivers' group reported to have delayed (56% vs. 32%) and five times more reported to have refused having their child get a shot for reasons other than illness or allergy (15% vs. 3%). More of the not fully vaccinated group representatives believed that it is their role as a parent to question vaccine shots (29% vs. 21%), considered themselves vaccine hesitant (26% vs. 7%) and less of them agreed that if they had another infant today, they would want him/her to get all the recommended vaccine shots (89% vs. 98%) (Table 7).

**Table 7. Caregivers' Children Immunization Practices, Immunization KAP Survey, 2016**

Characteristics	Total		NOT Vaccinated*	Fully Vaccinated	P**
	N	(%) / (Mean)	(%) / (Mean)	(%) / (Mean)	
Have you ever delayed having your child get a shot for reasons other than illness or allergy?					
Yes	328	44.9%	56.0%	31.5%	0.000
No	399	54.6%	43.7%	67.6%	
DNK*	4	0.5%	0.3%	0.9%	
Have you ever decided not to have your child get a shot for reasons other than illness or allergy?					

Yes	68	9.2%	14.7%	2.7%	0.000
No	667	90.6%	85.1%	97.3%	
DNK***	1	0.1%	0.2%	0%	
<b>How sure are you that following the recommended shot schedule are a good idea for your child?</b> <i>0 (Not at all sure) to 10 (Completely sure)</i>	729	9.37	9.09	9.71	0.000
<b>It is my role as a parent to question vaccine shots</b>					
<b>strongly agree</b>	52	7.1%	11.0%	2.4%	0.000
<b>agree</b>	133	18.1%	17.5%	18.9%	
<b>don't know</b>	61	8.3%	9.2%	7.2%	
<b>disagree</b>	364	49.6%	43.6%	56.8%	
<b>strongly disagree</b>	124	16.9%	18.7%	14.7%	
If you had another infant today, would you want him/her to get all the recommended shots?					
Yes	684	93.2%	89.1%	98.2%	0.000
No	16	2.2%	3.5%	0.6%	
DNK*	34	4.6%	7.5%	1.2%	
Overall, how hesitant about childhood shots would you consider yourself to be?					
<b>Not at all hesitant</b>	139	18.9%	17.7%	20.5%	0.000
<b>Not hesitant</b>	462	62.9%	55.7%	71.7%	
<b>Don't know</b>	6	0.8%	1.0%	0.6%	
<b>Little hesitant</b>	87	11.9%	16.2%	6.6%	
<b>Very hesitant</b>	40	5.4%	9.5%	0.6%	
Which of the following best describes your plans for vaccinating your youngest child?					
<b>Child has already received all recommended vaccines</b>	355	48.4%	41.0%	57.4%	0.000
<b>Child will receive all</b>	346	47.2%	51.5%	42.0%	



<b>recommended vaccines</b>				
<b>Child will receive some but not all recommended vaccines</b>	9	1.2%	2.0%	0.3%
<b>Child won't receive any recommended vaccines</b>	13	1.8%	3.0%	0.3%
<b>DNK</b>	10	1.4%	2.5%	0%

\*Not vaccinated fully, including those who have not been provided with even one vaccine shots.

\*\*Chi-square test/ T-test (for comparison of means)

\*\*\*DNK- Don't knows or don't remembers

**4.2.4. Vaccine Related Perceptions**

Respondent were also asked about their perceptions on the risks of vaccine preventable diseases (VPD), importance, safety and effectiveness of vaccines.

*VPD severity and vaccine benefit perceptions*

Big majority of the respondents agreed or strongly agreed (94%) that vaccines are necessary for their child's health, believed that many of the illnesses shots prevent are severe (93%), without vaccination their child could suffer from the serious health problems (91%) and considered their child immunization as important measure for prevention of disease spread in the community (87%) (Table 8).

While comparing responses of the caregivers of NOT vaccinated child (including both partially and not vaccinated child from the research cohort) the one with fully vaccinated child, the responses differed. Specifically compared to fully vaccinated group of caregivers less of them agree or strongly agree that vaccines are necessary for their child's health (90% vs. 98%), less of them believed that many of the illnesses shots prevent are severe (92.50% vs. 94.50%), without vaccination their child could suffer from the serious health problems (89% vs. 94%) and less of them considered their child immunization as important measure for prevention of disease spread in the community (85% vs. 90%).

*Vaccine safety perception*

More than 80% of the survey participants did not know anyone who had had a bad reaction to a shot, were confident regarding safety of routine childhood vaccines and considered it safe for their children giving on average 9 grades out of 10 (1-3 not at all safe and 8-10 very safe) for vaccine safety. However 26% of respondents still were a little or very much concerned that some of the childhood vaccine shots still might not be safe and almost half of respondents (49%) reported to be little or very concerned that their child might develop a serious side effect from a vaccine shot. Almost half of respondents (43%) named the information about vaccine Manufacturer County as important data while making decision on their child immunization.

Again different responses were obtained from the two groups of caregivers. More of those respondents whose child was not fully vaccinated had been acquaintance with a people having bad reactions after the vaccine shot (21% vs. 11%), in contrary less of them were confident in safety of routine childhood vaccines (78% vs. 93%) and respectively gave lower average grades for vaccine safety (8.83 vs. 9.56). Relatively more of not vaccinated children's caregivers (compared to fully vaccinated group) were concerned that some of the vaccine shots might be unsafe for their child (33% vs. 19%) and that their child might develop a serious side effect from a vaccine shot (57% vs. 39%). More of unvaccinated group representatives named vaccine Manufacturer County as important information for them to make decision regarding child immunization (47% vs. 37%).

### *Vaccine effectiveness vs risk perceptions*

The survey participants highly agreed with the statement that benefits of vaccination exceeds the risks providing average score of 9 out of 10 (1-3 not agree at all and 8–10 strongly agree). Still 41% doubted about effectiveness of vaccines reporting to be little or very concerned that a vaccine shot might not prevent the disease and 10% believed (agreed, strongly agreed or doubt) that it might be better for their child to develop immunity by getting sick than to get a shot.

The group of not fully vaccinated child's caregivers gave lower average score on the statement that benefits of vaccination exceeds the risks (8.83 vs. 9.56), more of them reported to be little or very concerned that a vaccine shot might not prevent the disease (43% vs. 39%) and more of them believed that it is better if child immunity by getting sick than to get a shot (12% vs. 7%).

### *Vaccine related concerns*

Only up to 1/3 of participants agreed, strongly agreed or where not sure regarding the fact that children get more shots than are good for them (2.9%, 4.9% and 13.1% respectively) and that it is better for their child to get fewer vaccines at the same time (1.4%, 6.3% and 24.1% respectively).

Traditionally not fully vaccinated children's caregivers were identified to be more concerned about number of vaccine shots compared to fully vaccinated group representatives, specifically more of them agreed or strongly agreed that children get more shots than are good for them (10% vs. 5%) and that it is better for their child to get fewer vaccines at the same time (10% vs. 5%).

More than 40% of respondents had some concerns regarding childhood vaccines. The most frequently named concerns included: fever in children after immunization (33%), unsafe ingredients in vaccines (11%), vaccines not be tested enough on safety (7%), child getting too many vaccines at the same visit (6%)

More of not fully vaccinated group representatives reported to have concerns related to vaccination compared to fully vaccinated group (53% vs. 32%) including those related to vaccine related fever, safety and association with autism (Table 8).

**Table 8. Vaccine Related Perceptions (Vaccine Importance, Safety and Efficacy), Immunization KAP Survey, 2016**

Characteristics	Total		NOT	Fully	P**
	N	(%) / (Mean)	Vaccinated*	Vaccinated	
		(%) / (Mean)	(%) / (Mean)	(%) / (Mean)	
Vaccines are necessary for my child?					
strongly agree	224	30.6%	30.2%	31.0%	0.006
agree	463	63.2%	59.9%	67.2%	
don't know	30	4.1%	6.5%	1.2%	
disagree	7	1.0%	1.5%	0.3%	
strongly disagree	9	1.2%	2.0%	0.3%	
My child could get a serious disease if he or she were not vaccinated?					
strongly agree	225	30.7%	30.8%	30.5%	0.076
agree	443	60.4%	58.0%	63.4%	
don't know	43	5.9%	6.7%	4.8%	
disagree	16	2.2%	3.2%	0.9%	
strongly disagree	6	0.8%	1.2%	0.3%	
I believe that many of the illnesses vaccine shots prevent are severe.					
strongly agree	315	43.1%	42.1%	44.2%	0.332
agree	368	50.3%	50.4%	50.3%	
don't know	20	2.7%	3.5%	1.8%	
disagree	25	3.4%	3.2%	3.6%	
strongly disagree	3	0.4%	0.7%	0%	
It is important to vaccinate my child in order to prevent the spread of disease in my community					
strongly agree	183	25.0%	27.1%	22.4%	0.430
agree	453	61.9%	57.5%	67.3%	
don't know	71	9.7%	10.7%	8.5%	
disagree	16	2.2%	3.0%	1.2%	
strongly disagree	9	1.2%	1.7%	0.6%	
Do you know of anyone who has had a bad reaction to a shot?					

Yes	118	16.1%	20.8%	10.5%	0.001
No	594	81.1%	76.2%	87.0%	
DNK***	20	2.7%	3.0%	2.4%	
How confident are you in the safety of routine childhood vaccines?					
<b>absolutely confident</b>	170	23.2%	20.6%	26.3%	0.000
<b>confident</b>	449	61.3%	57.2%	66.2%	
<b>don't know</b>	40	5.5%	7.5%	3.0%	
<b>not confident</b>	64	8.7%	12.4%	4.2%	
<b>absolutely not confident</b>	10	1.4%	2.2%	0.3%	
How concerned are you that any one of the childhood shots might not be safe?					
<b>not at all concerned</b>	37	5.1%	5.0%	5.2%	0.000
<b>not concerned</b>	434	59.6%	52.5%	68.2%	
<b>don't know</b>	65	8.9%	9.5%	8.2%	
<b>little concerned</b>	135	18.5%	20.9%	15.8%	
<b>very concerned</b>	57	7.8%	12.1%	2.7%	
How concerned are you that your child might have a serious side effect from a vaccine shot?					
<b>not at all concerned</b>	34	4.7%	3.7%	5.8%	0.000
<b>not concerned</b>	305	41.8%	35.7%	49.2%	
<b>don't know</b>	33	4.5%	3.5%	5.8%	
<b>little concerned</b>	273	37.4%	39.4%	35.0%	
<b>very concerned</b>	85	11.6%	17.7%	4.3%	
In general, how safe do you think vaccines are for your child? - 1-3 (not at all safe) - 8-10 (very safe)	731	9.16	8.830	9.562	0.000
When making decision about child vaccination how important is for you information which country was the vaccine manufactured?					
<b>very important</b>	104	14.2%	17.0%	10.9%	0.11
<b>important</b>	208	28.5%	30.4%	26.1%	

<b>don't know</b>	135	18.5%	19.0%	17.9%	
<b>not important</b>	269	36.8%	31.4%	43.3%	
<b>not at all important</b>	15	2.1%	2.2%	1.8%	
<b>How much agree that benefits of vaccination exceeds risks</b>					
- 1-3 (not agree at all)					
- 8-10 (strongly agree)	733	9.39	9.10	9.734	0.000
<b>How concerned are you that a shot might not prevent the disease?</b>					
<b>not at all concerned</b>	35	4.8%	5.7%	3.6%	0.000
<b>not concerned</b>	326	44.5%	39.3%	50.8%	
<b>don't know</b>	73	10.0%	12.4%	6.9%	
<b>little concerned</b>	267	36.4%	35.8%	37.2%	
<b>very concerned</b>	32	4.4%	6.7%	1.5%	
<b>It is better for my child to develop immunity by getting sick than to get a shot.</b>					
<b>strongly agree</b>	15	2.0%	2.7%	1.2%	0.157
<b>agree</b>	28	3.8%	5.0%	2.4%	
<b>don't know</b>	30	4.1%	4.7%	3.3%	
<b>disagree</b>	451	61.6%	60.2%	63.3%	
<b>strongly disagree</b>	208	28.4%	27.4%	29.7%	
<b>Children get more shots than are good for them</b>					
<b>strongly agree</b>	21	2.9%	4.5%	0.9%	0.000
<b>agree</b>	36	4.9%	5.5%	4.2%	
<b>don't know</b>	96	13.1%	16.9%	8.5%	
<b>disagree</b>	446	60.9%	55.7%	67.3%	
<b>strongly disagree</b>	133	18.2%	17.4%	19.1%	
<b>It is better for children to get fewer vaccines at the same time</b>					
<b>strongly agree</b>	10	1.4%	2.0%	0.6%	0.000
<b>agree</b>	46	6.3%	8.2%	4.0%	
<b>don't know</b>	176	24.1%	29.5%	17.6%	
<b>disagree</b>	406	55.7%	45.8%	67.8%	
<b>strongly disagree</b>	91	12.5%	14.5%	10.0%	
<b>Which concerns if any do you have about</b>					

<b>childhood immunizations?</b>					
<b>I have no concerns about childhood vaccines</b>	414	56.7%	47.0%	68.5%	
<b>Vaccines causing fever in my child</b>	242	33.2%	38.0%	27.3%	
<b>The ingredients in vaccines (what vaccines are made of) are unsafe</b>	81	11.1%	15.5%	5.8%	
<b>Vaccines are not tested enough for safety</b>	52	7.1%	9.5%	4.2%	
<b>My child getting too many vaccines in 1 doctor's visit</b>	47	6.4%	9.0%	3.3%	
<b>Other</b>	35	4.8%	7.3%	1.8%	
<b>Vaccines may cause learning disabilities (such as autism)</b>	28	3.8%	5.3%	2.1%	
<b>paid vaccines are better than free ones</b>	27	3.7%	4.0%	3.3%	
<b>Too many vaccines together may weaken child's immune system</b>	26	3.6%	5.3%	1.5%	
<b>Vaccines are given to children to prevent diseases that they are not likely to get</b>	25	3.4%	5.0%	1.5%	
<b>Children get too many vaccines during the first 2 years of life</b>	20	2.7%	4.3%	0.9%	
<b>Vaccines may cause chronic disease (such as diabetes, asthma, or immune system problems)</b>	11	1.5%	2.8%	0%	
<b>Vaccines are given to children to prevent diseases that are not serious</b>	7	1.0%	1.3%	0.6%	
<b>My child will not be vaccinated on time because there is shortage of vaccine supply</b>	2	0.3%	0.5%	0%	

#### 4.2.5. Trust toward Health Care Workers

Big majority of respondents (93%) agreed or strongly agreed to be provided with strong recommendations to vaccinate their child from their child’s health care provider (HCP) and reported that usually they follow the advice of their child's HCP (95%).

Majority of respondents reported that they were able to openly discuss their concerns about vaccine shots with their child's HCP (96%), though almost half of participants (48%) reported to ask only up to 3 questions regarding vaccines.

Most survey participants agreed or strongly agreed that Medical Professionals have child’s best interest in hats (90%), trusted the information about vaccines provided by HCPs (93%) and gave on average 9 points out of 10 (0 do not trust at all and 10 completely trust) when evaluating their trust toward HCPs (Table 9).

There was not identified slightly less trust toward health care providers among the group of not fully vaccinated children’s caregivers and little worse communication regarding child health issues (Table 9).

**Table 9. Caregivers’ Trust toward Health Care Providers, Immunization KAP Survey, 2016**

Characteristics	Total		NOT Vaccinated*	Fully Vaccinated	P**
	N	(%) / (Mean)	(%) / (Mean)	(%) / (Mean)	
<b>My child's health care provider has strongly recommended to vaccinate my child</b>					
strongly agree	314	42.7%	44.3%	40.8%	0.553
agree	372	50.6%	48.3%	53.5%	
don't know	2	0.3%	0.2%	0.3%	
disagree	46	6.3%	7.0%	5.4%	
strongly disagree	1	0.1%	0.2%	.0%	
<b>I usually follow the advice of my child's health care provider</b>					
strongly agree	295	40.2%	42.9%	37.0%	0.90
agree	402	54.8%	50.9%	59.6%	
don't know	13	1.8%	2.0%	1.5%	
disagree	22	3.0%	4.0%	1.8%	
strongly disagree	1	0.1%	0.2%	0%	
<b>Medical Professionals have child’s best interest in hats?</b>					

<b>strongly agree</b>	207	28.4%	31.2%	24.9%	<i>0.006</i>
<b>agree</b>	447	61.3%	56.0%	67.8%	
<b>don't know</b>	60	8.2%	10.5%	5.5%	
<b>disagree</b>	15	2.1%	2.2%	1.8%	
<b>strongly disagree</b>	207	28.4%	31.2%	24.9%	
<b>I am able to openly discuss my concerns about shots with my child's doctor.</b>					
<b>strongly agree</b>	265	36.3%	38.0%	34.2%	<i>0.194</i>
<b>agree</b>	435	59.6%	56.8%	63.0%	
<b>don't know</b>	7	1.0%	1.2%	0.6%	
<b>disagree</b>	23	3.2%	4.0%	2.1%	
<b>strongly disagree</b>	265	36.3%	38.0%	34.2%	
<b>Basically How many questions you ask your child's doctor?</b>					
<b>None</b>	84	11.6%	12.6%	10.4%	<i>0.001</i>
<b>1-3</b>	348	48.0%	41.5%	56.0%	
<b>4-6</b>	189	26.1%	28.6%	22.9%	
<b>7 and more</b>	104	14.3%	17.3%	10.7%	
<b>All things considered, how much do you trust your child's doctor? 0 (Do not trust at all) to 10 (Completely trust)</b>	728	9.59	9.51	9.69	
<b>I trust the information I receive about shots provided by my child's pediatrician.</b>					
<b>strongly agree</b>	280	38.5%	39.9%	36.8%	<i>0.052</i>
<b>agree</b>	398	54.7%	51.3%	59.0%	
<b>don't know</b>	30	4.1%	5.0%	3.0%	
<b>disagree</b>	17	2.3%	3.5%	0.9%	
<b>strongly disagree</b>	2	0.3%	0.3%	0.3%	

#### 4.2.6. Source of Information on Immunization

The most frequently sighted source of information on immunization was Child's health care provider (92%), followed by websites (33%), other medical personnel (21%), TV shows (14%), other person, in a close relation to the family such as relatives, neighbors and friends (11%) and family members (10%).



From 6-8% was named Internet media (8%), caregivers' parents (8%), mobile application and SMS (7%) and other family member such as mother-in-law and father-in-law (6%). Less than 3% was named social media such as Facebook, Adnaklasniki, etc. (3.1%), news reporting on TV (2.5%) , Printing media such as journals, newspapers, etc. (1.9%), Printed education materials such as posters, booklets, leaflets, etc. (1.9%), other not listed sources (1.6%), NCDC (1.5%) and UNICEF book on child development (0.4%). There was not mentioned at all such sources of information as Social advertisements on TV, Radio and Alternative health practitioners such as healers, homeopath, chiropraths, etc. (Table 10).

There was not identified major difference among two groups of not fully and fully vaccinated children's caregiver, though slightly more not fully vaccinated group representatives reported to use as a source for immunization their family (12.5% vs. 9.9%) and other person in a close relation to the family (i.e. relatives, neighbors, friends, etc.) (10.0% vs. 9.9%) and less of them use Mobile application, SMS compared to fully vaccinated group (5.5% vs. 7.8%).

**Table 10. Source of Information on Immunization, Immunization KAP Survey, 2016**

Characteristics	Total		NOT	Fully
	N	(%) / (Mean)	Vaccinated*	Vaccinated
		(%) / (Mean)	(%) / (Mean)	(%) / (Mean)
<b>In the last year what were the 3 most important sources of information that helped you make decisions about child's health</b>				
<b>My child's health care provider</b>	675	92.1%	89.8%	94.9%
<b>Websites</b>	241	32.9%	35.3%	30.0%
<b>Other medical personnel</b>	150	20.5%	20.8%	20.1%
<b>TV shows</b>	105	14.3%	14.0%	14.7%
<b>Other person, in a close relation to the family (i.e. relatives, neighbors, friends, etc.)</b>	83	11.3%	12.5%	9.9%
<b>My family</b>	73	10.0%	10.0%	9.9%
<b>Internet media (Internet TV for instance "Palitra")</b>	61	8.3%	8.8%	7.8%
<b>Mother/father</b>	57	7.8%	7.8%	7.8%
<b>Mobile application, SMS</b>	48	6.5%	5.5%	7.8%
<b>Other family member (i.e. mother-in-law, father-in-law, etc.)</b>	46	6.3%	6.3%	6.3%

<b>Social media (Facebook, Adnaklasniki, etc.)</b>	23	3.1%	2.5%	3.9%
<b>News reporting on TV</b>	18	2.5%	2.0%	3.0%
<b>Printing media (i.e. journals, newspapers, etc.)</b>	14	1.9%	1.8%	2.1%
<b>Printed education materials (i.e. posters, booklets, leaflets, etc.)</b>	14	1.9%	1.8%	2.1%
<b>Other</b>	12	1.6%	2.8%	0.3%
<b>NCDC</b>	11	1.5%	1.3%	1.8%
<b>UNICEF book on child development</b>	3	0.4%	0.5%	0.3%
<b>Social advertisements on TV</b>	0	0%	0%	0%
<b>Radio</b>	0	0%	0%	0%
<b>Alternative health practitioners (i.e. healers, homeopath, chiropraths, etc.,)</b>	0	0%	0%	0%

#### 4.2.7. Perceptions on Papillomavirus Vaccine

Respondents were also questioned specifically regarding vaccination against papilloma virus vaccination for their children. On the question regarding severity of VPD such cervical cancer almost all participants named it as a serious or a very serious disease (35.8% and 60.8% respectively), though almost all participants (94%) disagree or were not sure if their daughter was at risk of developing the disease. Only 62% respondents heard about HPV vaccine. Among them only 53.4% agreed to provide vaccination to their daughter and reported HPV vaccine somewhat important and safe for their daughter's health with average score of 7 and 6 out of 10 respectively.

**Table 11. Caregivers' Perceptions on Papillomavirus Vaccine, Immunization KAP Survey, 2016**

Characteristics	Total		NOT Vaccinated*	Fully Vaccinated	P**
	N	(%) / (Mean)	(%) / (Mean)	(%) / (Mean)	
<b>In your opinion how serious disease is the cervical cancer?</b>					
<b>not at all serious</b>	1	0.1%	0.0%	0.3%	0.576
<b>little serious</b>	2	0.3%	0.2%	0.3%	
<b>don't know</b>	22	3.0%	3.7%	2.1%	
<b>serious</b>	263	35.8%	35.3%	36.3%	

<b>very serious</b>	447	60.8%	60.7%	61.0%	
<b>How much do you agree that your (or relatives'/friends') daughter is at risk of development of the cervical cancer in future?</b>					
<b>strongly agree</b>	3	0.4%	0.0%	0.9%	<b>0.191</b>
<b>agree</b>	42	5.7%	6.7%	4.5%	
<b>don't know</b>	311	42.4%	43.1%	41.6%	
<b>disagree</b>	318	43.4%	41.6%	45.5%	
<b>strongly disagree</b>	59	8.0%	8.5%	7.5%	
<b>Have you ever heard about papilloma virus (HPV) vaccination?</b>					
<b>Yes</b>	459	62.5%	62.3%	62.8%	<b>0.484</b>
<b>No</b>	275	37.5%	37.7%	37.2%	
<b>How important is HPV vaccine for your (or relatives'/friends') daughter?</b> <i>1-3 (Not important)</i> <i>8-10 (Very Important)</i>	273	7.30	6.95	7.74	
<b>How much safe is HPV vaccine for your (or relatives'/friends') daughter?</b> <i>1-3 (Not safe)</i> <i>10 – (Completely safe)</i>	272	6.14	5.83	6.54	
<b>Would you vaccinate your (or relatives'/friends') daughter against HPV If recommended by the health care provider?</b>					
<b>Yes</b>	186	53.4%	48.1%	59.6%	<b>0.089</b>
<b>No</b>	56	16.1%	18.7%	13.0%	
<b>DNK</b>	106	30.5%	33.2%	27.3%	

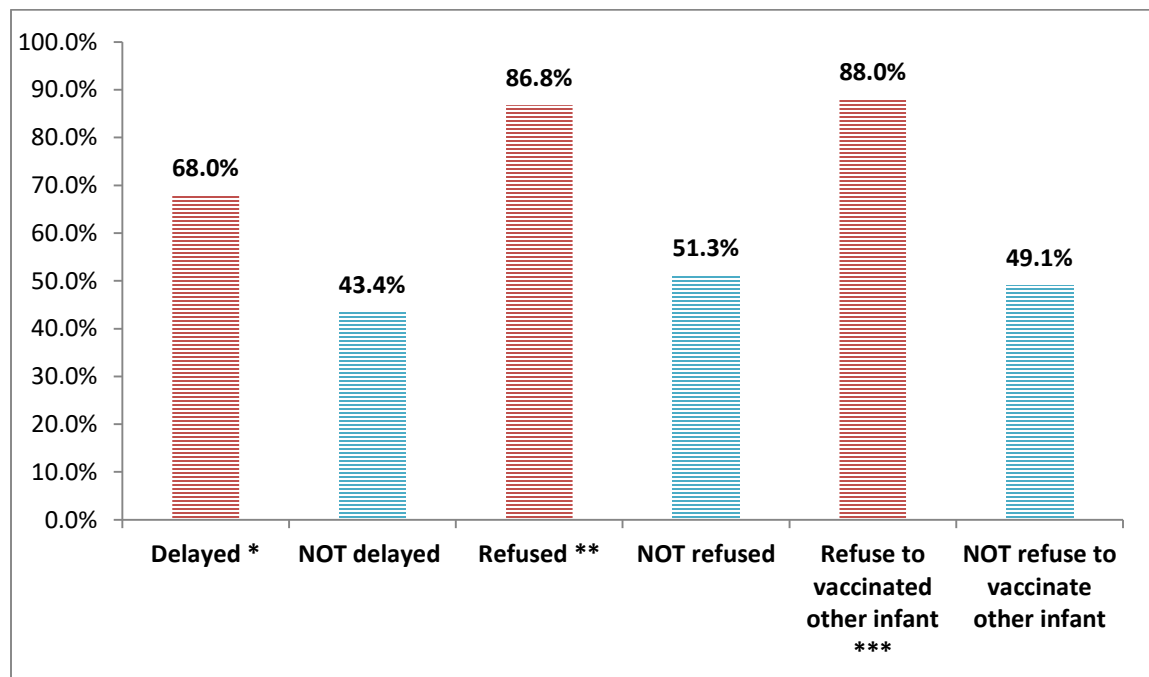
#### 4.2.8. Immunization Status Associated Factors, Bivariate Analysis

In addition to descriptive analysis additionally bivariate analysis was conducted to reveal factors significantly associated ( $p < 0.05$ ) with official vaccination status including socio-demographic characteristics, respondents' perceptions, trust and communication with Health Care Workers.

Bivariate analysis showed that research site was the only socio demographic characteristics by which official immunization status of research cohort participants were different, specifically Kutaisi and Tbilisi cohort representatives had 1.4 higher risk of having children not fully vaccinated compared to Batumi representatives (Table 12)

Official vaccinated status of children was also associated with caregiver's immunization practices. Those who reported to have ever delayed or refused having their child get a shot for reasons other than illness or allergy had more risks to have children not fully vaccinated compared to others (PR=1.6 and 1.7, respectively) (Fig 10).

**Figure 12. Prevalence of respondents with not fully vaccinated children according to their vaccination practices, Immunization KAP Survey, 2016**



\* Had ever delayed having their child get a shot for reasons other than illness or allergy;

\*\* Had ever decided not to have their child get a shot for reasons other than illness or allergy;

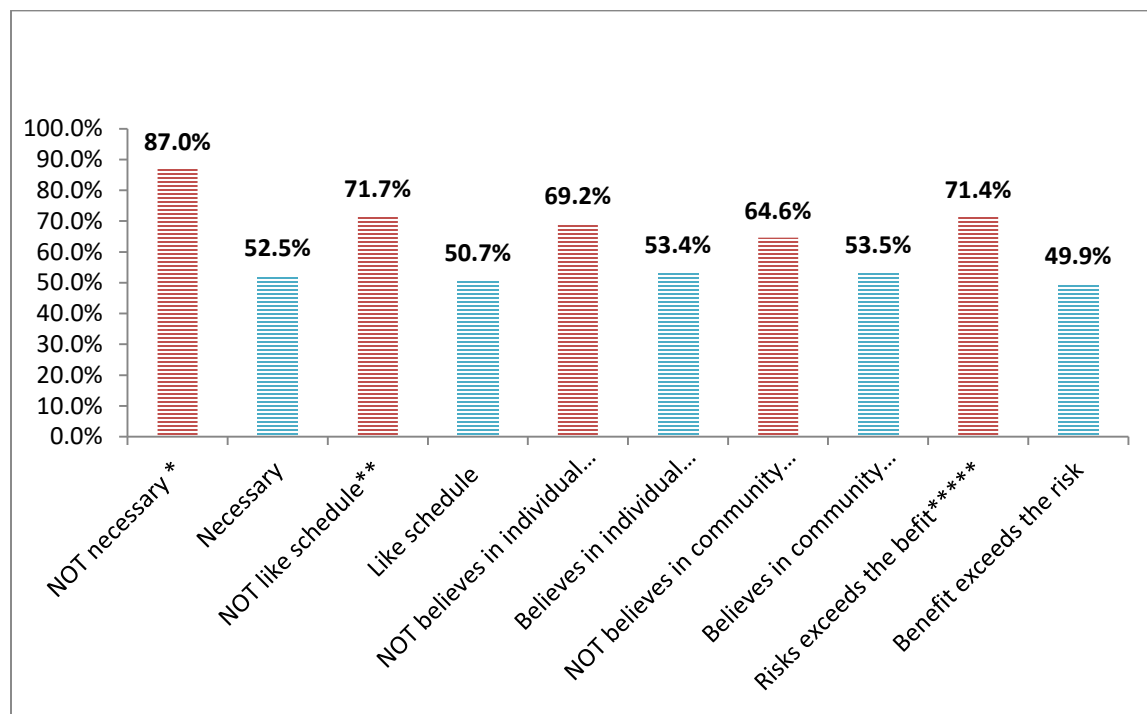
\*\*\* If she/he had another infant today, she/he would want him/her to get all the recommended shots.

Child immunization status was also significantly associated with their caregivers' knowledge and perception about risk and benefits of immunization.

Participants who did not believe that immunization is necessary, good and important to prevent serious diseases in their own children or the community and those who did not believe that

benefits of vaccination exceeds risks had higher risk of having children not fully vaccinated compared to others (Fig 11).

**Figure 13. Prevalence of respondents with not fully vaccinated children according to their perceptions about immunization benefits, Immunization KAP Survey, 2016**



\* Vaccines are necessary for my child?

\*\* How sure are you that following the recommended shot schedule are a good idea for your child?

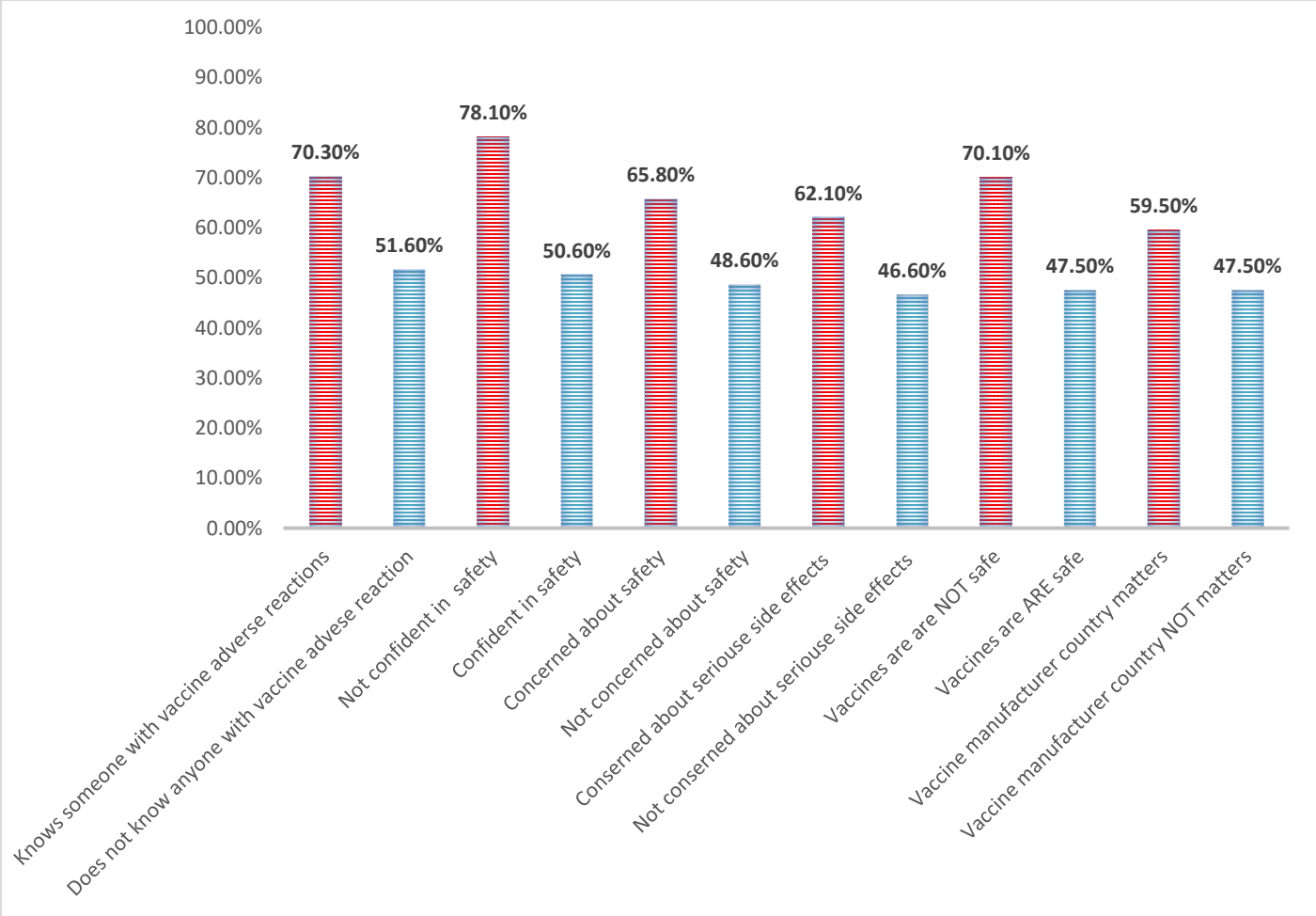
\*\*\* My child could get a serious disease if he or she were not vaccinated?

\*\*\*\* It is important to vaccinate my child in order to prevent the spread of disease in my community

\*\*\*\*\*How much agree that benefits of vaccination exceeds risks

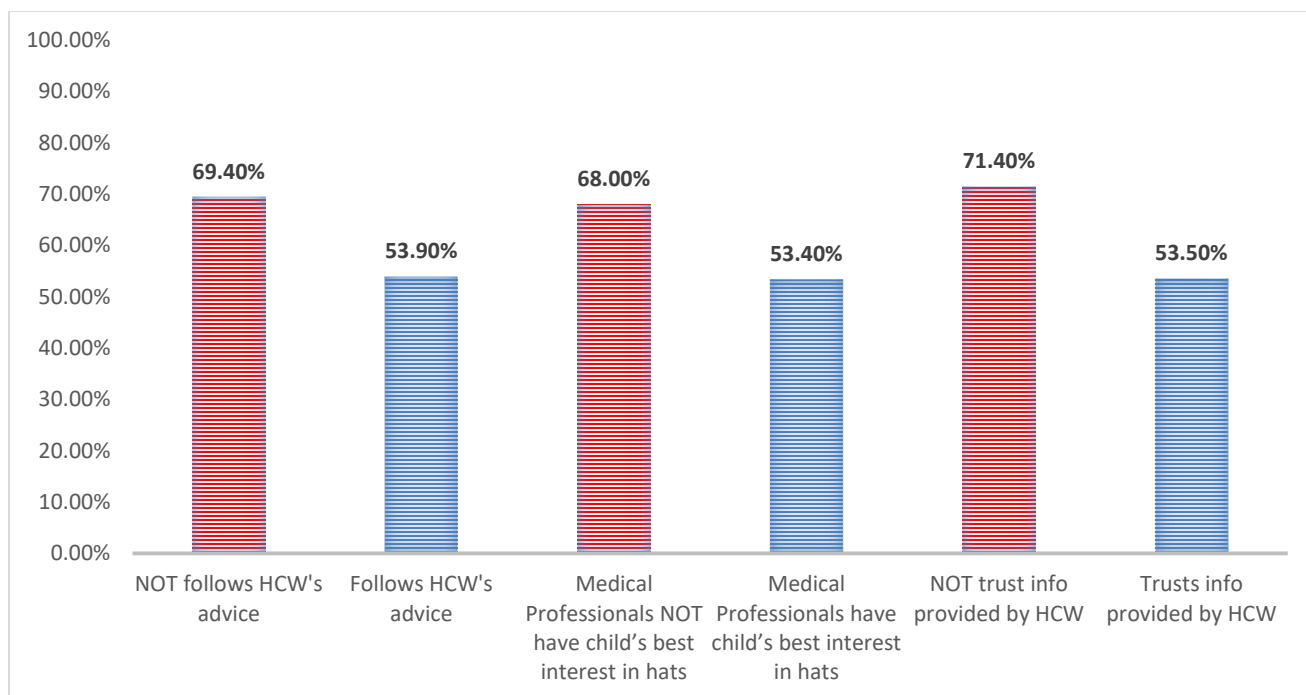
Survey participants who questioned safety of vaccine and were afraid of vaccine related adverse reactions had higher risk of having children not fully vaccinated (Fig 12) as well as the children of the survey participants who did not believe in effectiveness of vaccines, had concerns (including concerns about the number of vaccine shots) and considered themselves hesitant about child immunization (Table 12).

**Figure 14. Prevalence of respondents with not fully vaccinated children (un or under vaccinated status according to official data) according to their perceptions about vaccine safety, Immunization KAP Survey, 2016**



Trust and communication with HCWs were also identified as important predictors of child immunization status. Those participants who reported that did not follow the advice of their child's health care provider, did not believe that medical Professionals have child's best interest in hats and did not trust the information they receive about shots provided by their child's pediatrician were more likely to have their children not fully immunized (Fig 13).

**Figure 15. Prevalence of respondents with not fully vaccinated children according to their trust toward health care worker, Immunization KAP Survey, 2016**



Interestingly caregivers who considered that it is my role as a parent to question vaccine shots and reported to ask more than 4 questions to HCWs were more likely to have children under immunized (PR=1.7 and 1.3, respectively) (Table 12).

Table 12. Immunization Status Associated Factors, Bivariate Analysis, Immunization KAP Survey, 2016

Characteristics	NOT Vaccinated*				
	N	(%)	PR	95%CI	P
<b>Socio-Demographic</b>					
<b>Research site</b>					
<b>Batumi</b>	109	44.0%	1	---	---
<b>Kutaisi</b>	137	61.2%	1.44	(1.18 ; 1.76)	0.000
<b>Tbilisi</b>	157	59.2%	1.38	(1.15 ; 1.65)	0.000
<b>Vaccination Practices</b>					
Have you ever delayed having your child get a shot for reasons other than illness or allergy?					
Yes	223	68.0%	1.57	(1.37 ; 1.79)	0.000
No/DNK	175	43.4%	1	---	
Have you ever decided not to have your child get					

a shot for reasons other than illness or allergy?					
Yes	59	86.8%	1.69	(1.50 ; 1.90)	0.000
No	343	51.3%	1	---	
If you had another infant today, would you want him/her to get all the recommended shots?					
Yes	358	52.3%	1	---	0.000
No/DNK	44	88.0%	1.68	(1.48 ; 1.91)	
<b>Vaccine Perceptions</b>					
• <i>Benefit</i>					
Vaccines are necessary for my child?					
<b>Not agree/DNK</b>	40	87.0%	1.66	(1.45 ; 1.89)	0.000
<b>Agree</b>	361	52.5%	1	---	
<b>How sure are you that following the recommended shot schedule are a good idea for your child?</b> <i>0 (Not at all sure) to 10 (Completely sure)</i>					
<b>Not sure (0-9 score)</b>	104	71.7%	1.42	(1.24 ; 1.61)	0.000
<b>Sure (10 score)</b>	296	50.7%	1	---	
<b>My child could get a serious disease if he or she were not vaccinated?</b>					
<b>Not agree/DNK</b>	45	69.2%	1.30	(1.09 ; 1.55)	0.010
<b>Agree</b>	357	53.4%	1	---	
It is important to vaccinate my child in order to prevent the spread of disease in my community					
<b>Not agree/DNK</b>	62	64.6%	1.21	(1.02 ; 1.43)	0.026
<b>Agree</b>	340	53.5%	1	---	
<b>How much agree that benefits of vaccination exceeds risks</b> <i>1-3 (not agree at all) 8-10 (strongly agree)</i>					



<b>Not agree score (1-9)</b>	120	71.4%	1.43	(1.26 ; 1.62)	0.000
<b>Agree (10 score)</b>	282	49.9%	1	---	
• <i>Fear of adverse reactions</i>					
<b>Do you know of anyone who has had a bad reaction to a shot?</b>					
Yes	83	70.3%	1.36	(1.18 ; 1.57)	0.000
No	317	51.6%	1	---	
<b>How confident are you in the safety of routine childhood vaccines?</b>					
<b>Not confident/DNK</b>	89	78.1%	1.54	(1.36 ; 1.75)	0.000
<b>Confident</b>	313	50.6%	1	---	
<b>How concerned are you that any one of the childhood shots might not be safe?</b>					
<b>Concerned</b>	169	65.8%	1.35	( 1.19 ; 1.54)	0.000
<b>Not concerned/DNK</b>	229	48.6%	1	---	
<b>How concerned are you that your child might have a serious side effect from a vaccine shot?</b>					
<b>Concerned</b>	243	62.1%	1.33	(1.16 ; 1.53)	0.000
<b>Not concerned/DNK</b>	158	46.6%	1	---	
<b>In general, how safe do you think vaccines are for your child?</b> <i>1-3 (not at all safe)</i> <i>8-10 (very safe)</i>					
<b>0-9 score</b>	164	70.1%	1.48	(1.30 ; 1.67)	0.000
<b>10 score</b>	236	47.5%	1	---	
<b>When making decision about child vaccination how important is for you information which country was the vaccine manufactured?</b>					
<b>Important/DNK</b>	266	59.5%	1.25	(1.08 ; 1.45)	0.001
<b>Not important</b>	135	47.5%	1	---	
• <i>Effectiveness</i>					

<b>How concerned are you that a shot might not prevent the disease?</b>					
<b>Concerned/DNK</b>	221	59.4%	1.19	(1.04 ; 1.35)	0.007
<b>Not concerned</b>	181	50.1%	1	---	
<b>It is better for my child to develop immunity by getting sick than to get a shot.</b>					
<b>Agree/DNK</b>	50	68.5%	1.28	(1.08 ; 1.52)	0.009
<b>Not agree</b>	352	53.4%	1	---	
<b>• Number of vaccine shots</b>					
<b>Children get more shots than are good for them</b>					
<b>Agree/DNK</b>	108	70.6%	1.39	(1.22 ; 1.58)	0.000
<b>Not agree</b>	294	50.8%	1	---	
<b>It is better for children to get fewer vaccines at the same time</b>					
<b>strongly agree</b>	159	68.5%	1.41	(1.25 ; 1.60)	0.000
<b>agree</b>	241	48.5%	1	---	
<b>• Vaccine hesitancy and concerns</b>					
<b>Which concerns if any do you have about childhood immunizations?</b>					
<b>Concerned</b>	214	66.5%	1.46	(1.28 ; 1.66)	0.000
<b>Not concerned</b>	189	45.5%	1	---	
<b>Overall, how hesitant about childhood shots would you consider yourself to be?</b>					
<b>Not hesitant</b>	295	49.1%	1	---	0.000
<b>Hesitant/DNK</b>	107	80.5%	1.64	(1.46 ; 1.84)	
<b>Trust and communication with Health Care Workers (HCWs)</b>					
<b>• Trust toward HCWs</b>					
<b>I usually follow the advice</b>					

<b>of my child's health care provider</b>					
<b>Not agree/DNK</b>	25	69.4%	1.29	(1.03 ; 1.62)	<i>0.48</i>
<b>Agree</b>	376	53.9%	1	---	
<b>Medical Professionals have child's best interest in hats?</b>					
<b>Not agree/DNK</b>	51	68.0%	1.27	(1.07 ; 1.51)	<i>0.010</i>
<b>Agree</b>	349	53.4%	1	---	
<b>I trust the information I receive about shots provided by my child's pediatrician.</b>					
<b>Not agree/DNK</b>	35	71.4%	1.33	(1.10 ; 1.61)	<i>0.010</i>
<b>Agree</b>	363	53.5%	1	---	
<b>• Communication with HCWs</b>					
<b>It is my role as a parent to question vaccine shots</b>					
<b>strongly agree</b>	44	84.6%	1.67	(1.45 ; 1.93)	<i>0.000</i>
<b>Other (agree/DNK/don't agree)</b>	282	50.5%	1	---	
<b>Basically How many questions you ask your child's doctor?</b>					
<b>Asks a lot questions (4≥)</b>	183	62.5%	1.26	(1.10 ; 1.43)	<i>0.000</i>
<b>Asks few questions (3≤)</b>	215	49.8%	1	---	

*\* Cohort representative official immunization status – child did not get all recommended vaccines for the given age according to National Immunization Schedule of the country of Georgia*

#### 4.2.9. HPV vaccine perceptions and acceptance

Additional bivariate analysis was conducted to assess factors associated with parental acceptance of HPV vaccination for their daughters. Responses of 3 research site respondents differed on the question whether they would vaccinate their child against HPV if recommended by HCW, though statistically significant difference was only identified among Batumi and Tbilisi representatives. Specifically Batumi representatives were 1.4 and Kutaisi 1.2 more likely to agree on child HPV vaccination compared to Tbilisi.

Official immunization status of the child was not significantly associated with caregivers' willingness to vaccinate their child on HPV, though those who had their children fully vaccinated were slightly more likely to vaccinate child against HPV as well (PR=1.20 95%CI:0.95;1.51).

Additionally respondents who agreed that HPV vaccine is necessary and safe for their child were almost 3 times more likely to agree on their child HPV vaccination compared to others (PR=2.93 95%CI:2.28; 3.78 and PR=2.25 95%CI:1.88 ; 2.70, respectively). Other factors such cervical cancer risk perception, specifically perceptions of the given disease susceptibility for their children was not significantly associated with caregivers' willingness to vaccinate their daughters against HPV infection, though still those who had such perception were slightly more likely to agree on HPV vaccination compared to other group (PR=1.29 95%CI:0.97 ;1.71) (Table 13).

**Table 13.HPV Vaccine Acceptance Associated Factors, Bivariate Analysis, Immunization KAP Survey, 2016**

Characteristics	Agree to vaccinate child with HPV vaccine if recommended by HCW				
	N	(%)	PR	95%CI	P
<b>Socio-Demographic</b>					
<b>Research site</b>					
<b>Batumi</b>	74	61.7%	1.38	(1.09 ; 1.74)	0.005
<b>Kutaisi</b>	51	55.4%	1.24	(0.95 ; 1.61)	0.076
<b>Tbilisi</b>	61	44.9%	1	---	---
<b>Official Immunization status</b>					
<b>Fully vaccinated</b>	71	57.7%	1.20	(0.95 ; 1.51)	0.079
<b>Not fully vaccinated</b>	64	48.1%	1	---	
<b>How important is HPV vaccine for your (or relatives'/friends') daughter?</b>					
<b>Very Important (10 score)</b>	65	92.9%	2.93	(2.28 ; 3.78)	0.000
<b>Not important (1-9 score )</b>	44	31.7%	1	---	
<b>How much safe is HPV vaccine for your (or relatives'/friends')</b>					

<b>daughter?</b>					
Safe (10 score)	34	97.1%	2.25	(1.88 ; 2.70)	<i>0.000</i>
Not Safe (1-9 score)	75	43.1%	1	---	
<b>How much do you agree that your (or relatives'/friends') daughter is at risk of development of the cervical cancer in future?</b>					
Agree	21	65.6%	1.29	(0.97 ; 1.71)	<i>0.085</i>
Not agree/DNK	113	50.9%	1	---	

Appendix #1  
Survey Questionnaire

QUESTIONNAIRE			
Participant ID CL <input type="text"/> IN <input type="text"/> <input type="text"/> <input type="text"/> H <input type="text"/> <input type="text"/> <input type="text"/>			
Contact Information	Response		Skip
<b>C1</b> <b>The status of the interview</b>  - If the respondent found at one of the address, but were unable to contact him/her during the study period, write 2 (Non-response - signed as a refusal)  - If the respondent can not found either on real address not on the address provided by immunization provider , write 3 (Non-eligible - will be randomly selected to replace the alternative respondents)	Address is right and respondent is reach	1	Finish
	Address is right and respondent is'n reach	2	
	Incorrect address/address not found	3	
<b>C2</b> Confirm date of interview  <i>Record date when instrument actually completed</i>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Min      hr      dd      mm		
<b>C3</b> Does respondent agree to be conducted during follow-up survey <i>(Reassure the respondent about the confidential nature of this information and that this is only needed for follow up to conduct the same interview) if refuse fix- Non-response)</i>	Yes	1	
	No	2	
<b>C4</b> Child's Name and Surname	Name	<input type="text"/>	
	Surname	<input type="text"/>	
<b>C5</b> Child's date of birth <i>If respondent doesn't know date of birth, record 88 88 8888</i>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> dd      mm      yy		
<b>C6</b> Sex <i>Choose Male / Female as observed.</i>	Male 1 Female 2		
<b>C7_1</b> <b>C7_2</b> <b>C7_3</b> Address <i>Indicate/city village name and street name and # as appropriate</i> <i>Refused - 99</i>	City/Village	<input type="text"/>	
	Street # and name	<input type="text"/>	

		<b>Apartment #</b>	_____	
<b>C8</b>	<b>The person responsible on child</b>  Child health (including immunization) who who can answer on questions regarding child's immunization!	Parent (Mother/Father) 1 Family Member 2 Relative 3  Guardian/Custodian 4		
<b>C7</b>	Family Surname <i>Enter respondent's family surname</i> Refused - 99	-----		
<b>C8</b>	First Name <i>Enter respondent's first name.</i> Refused - 99	-----		
<b>C9</b>	Landline Phone #  Refused - 99	_____		
<b>C10</b>	Mobile Phone #  Refused - 99	5 _____		

Module 1: Demographic Information			
Question		Response	გადასვლ ს
<b>D1</b>	Sex  <i>Choose Male / Female as observed.</i>	Male 1  Female 2	
<b>D2</b>	What is your date of birth? <i>Record respondent's date of birth.</i>  <i>If respondent doesn't know date of birth, record 88 88 8888</i>	_____ dd      mm      year	
<b>D3</b>	How old are you? <i>Help respondent estimate their age by interviewing them about their recollection of widely known major events.</i>	Years      _____	
<b>D4</b>	What is the <b>highest level of education</b> you have completed?  <i>If a respondent attended some secondary school but did not complete it, record "primary school"</i>	No formal schooling 1 Completed less than Elementary school 2 Completed Elementary school 3 Completed Primary school (Grades 1-7) 4	


	<i>completed". If a person only attended a few years of primary school, record "less than primary school".</i>	Completed Secondary school 5 Completed Professional/Technical 6 Completed University/College 7 Completed Post-graduate degree 8	
<b>D5</b> <b>D5_</b> <b>OTH</b> <b>ER</b>	What is your ethnic <b>background</b> ?  <i>Choose the relevant ethnic/cultural group to which the respondent belongs.</i>	Georgian 1 Armenian 2 Azeri 3 Ossetian 4 Russian 5 Other: _____ 77 Don't know/remember 88	
<b>D6</b> <b>D6_</b> <b>OTH</b> <b>ER</b>	What is your religion?  <i>refuse - 99</i>	Orthodox Cristian 1 Jewish 2 Jehovah's Witness 3 Muslim 4 Roman Catholic 5 Not Religious 6 Other: _____ 77	
<b>D7</b>	What is your <b>marital status</b> ?  <i>defuse - 99</i>	Never married 1 Currently married 2 Separated 3 Divorced 4 Widowed 5 Living with partner 6	
<b>D8</b>	Which of the following best describes your <b>main work status</b> over the past year?  <i>The purpose of this question is to help answer other questions such as whether or not health status contributes to unemployment, or whether people in different kinds of occupations may be confronted with different risk factors.</i> <i>Choose appropriate response.</i> <i>უპასო- 99</i>	Government employee 1 Non-government employee 2 Self-employed 3 Non-paid worker 4 <i>(ex. volunteer work, childcare, homemaker or elder care for family members)</i> Student 5 Retired 6 Unemployed (able to work) 7 Unemployed (unable to work) 8	
<b>D9</b> <b>D9_</b> <b>OTH</b>	Does your family rent, or own the house you live in?	Rent 1 Own 2 Other: _____ 77	



<b>ER</b>		Don't know/remember 88	
<b>D10</b>	How many people older than 18 years, including yourself, "live permanently" in your household?  <i>Record the total number of people living in the household who are 18 years or older. ("Lived permanently" means sleeping in the house at least 6 months out of the whole year). If participant doesn't know or remember (enter 88)</i>	Number of people <input type="text"/>	
<b>D11</b>	How many under 18-year-old children do you have? (If you ask a grandmother ask about grandchild)	Number of children <input type="text"/>	
<b>D12_1</b> <b>D12_2</b> <b>D12_3</b> <b>D12_4</b> <b>D12_5</b>	<b>In the last year</b> , can you tell me what the average earnings of your household have been? ("Earnings" includes all money made by any household member from a job, pension, child support, alimony, contributions from family members or others, workers' compensation, unemployment compensation, social security, investments, and veterans benefits.)  <i>Record the average earnings of the household either by week, month, <b>OR</b> year (not all 3).</i>	GEL per week <input type="text"/> OR GEL per month <input type="text"/> OR GEL per year <input type="text"/> Refused 99 Don't know exact amount 88	<b>D14</b>    <b>D13</b>
<b>D13</b>	How many people earn money in your household? ( <i>"Earn" means employed, self-employed, or on a pension as stated in Q-D8</i> ). If participant doesn't know or remember (enter 88)and if refuses (99)	Number of people <input type="text"/>	
<b>D14</b>	Have you ever been forced to move from your house because of war or civil unrest?	Yes 1 No 2  Don't know/remember 88	

Module 2: Immunization Status			
Question		Response	
IS1	Immunization status	a. Child has no vaccine	1
		b. Partially vaccinated #1 One or more vaccination (after vaccination in maternity)	2
		c. Partially vaccinated #2 (vaccination only in maternity) (BCG/HepB <sub>0</sub> )	3
		d. Fully vaccinated (have every vaccination right age, by national calendar)	4
IS2	Vaccinated with paid-vaccine According to respondent !!!	Yes 1 No 2 Don't know/remember 88	
IS3	Child vaccinated on time According to respondent !!!	Yes 1 No 2 Don't know/remember 88	
IS4	Do you give some medicine before vaccinated?	Yes recommendation by pediatrician/ family nurse	1
		Yes by me	2
		No	3
		Don't know/remember	88

**Module 3 – Immunization Behavior**

Question		Response					Skip
B1	Have you ever delayed having your child get a shot for reasons other than illness or allergy?	Yes 1 No 2  Don't know/remember 88					
B2	Have you ever decided not to have your child get a shot for reasons other than illness or allergy?	Yes 1 No 2  Don't know/remember 88					
B3	How sure are you that following the recommended shot schedule is a good idea for your child? 0 (Not at all sure) to 10 (Completely sure)	Point 					
B4	It is my role as a parent to question shots.	<i>Absolutely Agree</i>	<i>Agree</i>	<i>Don't know</i>	<i>Don't Agree</i>	<i>Absolutely Don't Agree</i>	
		<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	
B5	If you had another infant today, would you want him/her to get all the recommended shots?	Yes 1 No 2  Don't agree 88					
B6	Overall, how hesitant about childhood shots would you	<i>Don't hesitate at all</i>	<i>Don't hesitate</i>	<i>Don't know</i>	<i>Hesitate</i>	<i>Very hesitate</i>	


	consider yourself to be?	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5		
B7	Which of the following best describes your plans for vaccinating your youngest child?	Has already received all recommended vaccines	1					
		Will receive all recommended vaccines	2					
		Will receive some but not all recommended vaccines	3					
		Will receive none of the recommended vaccines	4					
		DNK	88					

Module 4 – Beliefs about Vaccine Safety and Efficacy							
Question		Response					Skip
How much do you agree with the opinion?							
NSA1	Vaccines are necessary for my child?	<i>Absolutely Agree</i>	<i>Agree</i>	<i>Don't know</i>	<i>Don't Agree</i>	<i>Absolutely Don't Agree</i>	
		<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	
NSA2	My child could get a serious disease if he or she were not vaccinated?	<i>Absolutely Agree</i>	<i>Agree</i>	<i>Don't know</i>	<i>Don't Agree</i>	<i>Absolutely Don't Agree</i>	
		<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	
NSA3	It is important to vaccinate my child in order to prevent the spread of disease in my community	<i>Absolutely Agree</i>	<i>Agree</i>	<i>Don't know</i>	<i>Don't Agree</i>	<i>Absolutely Don't Agree</i>	
		<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	
NSA4	How confident are you in the safety of routine childhood vaccines?	<i>Absolutely Sure</i>	<i>Sure</i>	<i>Don't know</i>	<i>Not Sure</i>	<i>Absolutely Not Sure</i>	
		<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	
NSA5	When deciding vaccinating child do they pay attention vaccine-producing countries?	<i>Very important</i>	<i>Important</i>	<i>Don't know</i>	<i>Not important</i>	<i>Absolutely Not Important</i>	
	<i>Is the vaccine produced by developed or undeveloped country?</i>	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	

NSA6	In general, how safe do you think vaccines are for children?  1–3 (not at all safe) 8–10 (very safe)	Point <input type="checkbox"/>				
NSA7	1-10 How much agree that benefits of vaccination exceeds risks. Rate point 1–3 (Absolutely Don-t agree) 8–10 (Absolutely agree)	Point <input type="checkbox"/>				
NSA8	Children get more shots than are good for them	<i>Absolutely Agree</i>	<i>Agree</i>	<i>Don't know</i>	<u><i>Don't Agree</i></u>	<i>Absolutely Don't Agree</i>
		<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
NSA9	I believe that many of the illnesses shots prevent are severe.	<i>Absolutely Agree</i>	<i>Agree</i>	<i>Don't know</i>	<u><i>Don't Agree</i></u>	<i>Absolutely Don't Agree</i>
		<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
NSA10	It is better for my child to develop immunity by getting sick than to get a shot.	<i>Absolutely Agree</i>	<i>Agree</i>	<i>Don't know</i>	<u><i>Don't Agree</i></u>	<i>Absolutely Don't Agree</i>
		<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
NSA11	It is better for children to get fewer vaccines at the same time.	<i>Absolutely Agree</i>	<i>Agree</i>	<i>Don't know</i>	<u><i>Don't Agree</i></u>	<i>Absolutely Don't Agree</i>
		<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
NSA12	How concerned are you that your child might have a serious side effect from a shot?	<i>Don't care at all</i>	<i>Don't care</i>	<i>Don't know</i>	<i>Care a little</i>	<i>Very care</i>
		<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
NSA13	How concerned are you that any one of the childhood shots might not be safe?	<i>Don't care at all</i>	<i>Don't care</i>	<i>Don't know</i>	<i>Care a little</i>	<i>Very care</i>
		<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
NSA14	How concerned are you that a shot might not prevent the disease?	<i>Don't care at all</i>	<i>Don't care</i>	<i>Don't know</i>	<i>Care a little</i>	<i>Very care</i>
		<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
NSA15	Do you know of anyone who has had a bad reaction to a	Yes				1
		No				2

	shot?		
		Don't know/remember	88
NSA16	Which concerns if any do you have about childhood immunizations?	I have no concerns about childhood vaccines	<input type="checkbox"/>
		My child getting too many vaccines in 1 doctor's visit	<input type="checkbox"/>
		Too many vaccines together may weaken child's immune system	<input type="checkbox"/>
		Vaccines causing fever in my child	<input type="checkbox"/>
		Children get too many vaccines during the first 2 years of life	<input type="checkbox"/>
		Vaccines may cause learning disabilities (such as autism)	<input type="checkbox"/>
		The ingredients in vaccines (what vaccines are made of) are unsafe	<input type="checkbox"/>
		Vaccines are given to children to prevent diseases that they are not likely to get	<input type="checkbox"/>
		Vaccines are given to children to prevent diseases that are not serious	
		Vaccines may cause chronic disease (such as diabetes, asthma, or immune system problems)	<input type="checkbox"/>
		Vaccines are not tested enough for safety	<input type="checkbox"/>
		My child will not be vaccinated on time because there is shortage of supply	<input type="checkbox"/>
		paid vaccines are better than free ones	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Specify.....			

Module 5 - Thrust							
Question		Response					Skip
T1	My child's health care provider has strongly recommended that I vaccinate my child	<i>Absolutely Agree</i>	<i>Agree</i>	<i>Don't know</i>	<i>Don't Agree</i>	<i>Absolutely Don't Agree</i>	
		<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	
T2	I usually follow the advice of my child's health care provider	<i>Absolutely Agree</i>	<i>Agree</i>	<i>Don't know</i>	<i>Don't Agree</i>	<i>Absolutely Don't Agree</i>	
		<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	
T3	I am able to openly discuss my concerns about shots with my child's doctor.	<i>Absolutely Agree</i>	<i>Agree</i>	<i>Don't know</i>	<i>Don't Agree</i>	<i>Absolutely Don't Agree</i>	
		<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	
T4	Medical Professionals have children's best interest in hats?	<i>Absolutely Agree</i>	<i>Agree</i>	<i>Don't know</i>	<i>Don't Agree</i>	<i>Absolutely Don't Agree</i>	

		<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	
T5	I trust the information I receive about shots.	<i>Absolutely Agree</i>	<i>Agree</i>	<i>Don't know</i>	<i>Don't Agree</i>	<i>Absolutely Don't Agree</i>	
		<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	
T6	<b>All things considered, how much do you trust your child's doctor?</b> 0 (Do not trust at all) to 10 (Completely trust)	Point 					
T7	<b>Basically How many questions you ask your child's doctor ?</b>	None	1				
		1-3 Questions	2				
		4-6 questions	3				
		≥7 Questions	4				

Module 6 – Informational source			
	Question	Response	Skip
INF1	<b>In the last year what were the 3 most important sources of information that helped you make decisions about child's health</b>  (Mark a maximum 3 )	My child's health care provider	<input type="checkbox"/>
		Other medical personnel	<input type="checkbox"/>
		My family	<input type="checkbox"/>
		Mother/father	<input type="checkbox"/>
		Other family member (i.e. mother-in-law, father-in-law, etc.)	<input type="checkbox"/>
		Other person, in a close relation to the family (i.e. relatives, neighbors, friends, etc.)	<input type="checkbox"/>
		NCDC	<input type="checkbox"/>
		Mobile application, SMS	<input type="checkbox"/>
		Websites	<input type="checkbox"/>
		Internet media (Internet TV for instance "Palitra")	<input type="checkbox"/>
		Social media (Facebook, Adnaklasniki, etc.)	<input type="checkbox"/>
		Printing media (i.e. journals, newspapers, etc.)	<input type="checkbox"/>
		News reporting on TV	<input type="checkbox"/>
		TV shows	<input type="checkbox"/>
		Social advertisements on TV	<input type="checkbox"/>
Radio	<input type="checkbox"/>		

	Alternative health practitioners (i.e. healers, homeopath, chiropraths, etc.)	<input type="checkbox"/>	
	Printed education materials (i.e. posters, booklets, leaflets, etc.)	<input type="checkbox"/>	
	UNICEF book on child development	<input type="checkbox"/>	
	Other	<input type="checkbox"/>	
	My child's health care provider	<input type="checkbox"/>	
	Specify	-----	

Module 7 – Anti papilloma virus vaccinacion							
Question		Response					Skip
HPV1	How do you think how serious disease is the cervical cancer?	<i>Not serious</i>	<i>A little seious</i>	<i>Don't know</i>	<i>Serious</i>	<i>Very serious</i>	
		<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	
HPV2	How much do you agree that your (or relatives'/friends') daughter is at risk of development of the cervical cancer in future?  <i>So maybe develop this desease in future</i>	<i>Abslute agree</i>	<i>Don't agree</i>	<i>Don't know</i>	<i>Agree</i>	<i>Absolute agree</i>	
		<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	
HPV3	Have you ever heard about papilloma virus (HPV) vaccination?	Yes	1				If not, Finish!!!
		No	2				
HPV4	How important is HPV vaccine for your (or relatives'/friends') daughter? <b>1-3 (Not important)</b> <b>8-10 (Very Importants)</b>	Point		┌┐			
HPV5	How much safe is HPV vaccine for your (or relatives'/friends') daughter? <b>1-3 ( Not safe)</b> <b>10 – (Completely safe)</b>	Point		┌┐			
HPV6	Would you vaccinate your (or relatives'/friends') daughter against HPV If recommended by the health care provider?	Yes	1				
		No	2				
		Not sure	3				