

## Parental Satisfaction Towards Childhood Immunization and its Associated Factor in Bahir Dar Health Centers, Ethiopia 2021- 2022

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### Abstract

**Back ground:** Parental satisfaction is the individual's favorable assessment of a certain aspect of healthcare. The reasons for measuring client happiness include explaining health care services from the client's perspective, measuring the care process, and evaluating care as a function of client contentment. However, there is a dearth of information on parent satisfaction in Ethiopia and Africa. Therefore, this study will attempt to close the gap and provide some important information in this area. Since there is insufficient information available in this area, it is crucial to evaluate the enabling elements that can increase the service's uptake among parents.

**Objective:** To evaluate parental support for childhood vaccination and the factors that contribute to that support in Bahir Dar health sites in Ethiopia

**Method:** cross-sectional study design was employed among 245 parent's/caretakers to child (6– 23months) from July 1 to July 14 in Bahir Dar health centers. 245 parents were selected using systematic random sampling technique.

**Result:** in this study 59.8% (147 of 244) of the parents were satisfied towards immunization service provided. parents who got service within short waiting time (<30min) satisfied more likely than served in long waiting time (>30min) AOR (95%CI) =2.138(1.052, 4.347). 78.3% of parent's were happy for the courtesy and respect they were getting. 81.1% of parent's were satisfied the skills of providers and 77% were satisfied with the overall health team service they were given.39.8% of parent's were dissatisfied with the information they were provided on immunization.

**Conclusion:** In this investigation, a positive level of satisfaction was noted. Activities related to the immunization procedure, accessibility, and structural characteristics were all substantially related to parental satisfaction.

**Recommendation:** To increase parental satisfaction, it is essential to improve the service procedure, wait times, and information provided. Caretakers should receive correct information regarding the benefits and adverse effects of vaccines so that informed decisions about immunization can be made.

**Keywords:** Parental Satisfaction, Childhood Immunization, Associated Factors

## Lists of Abbreviations and Acr

**BCG:** Bacillus Calumet Guerin  
**DPT:** Diphtheria, Pertussis, Tetanus  
**EDHS:** Ethiopian Demographic and Health Survey  
**EPI:** Expanded Programme of Immunization  
**FJHW:** Female Junior Health Worker  
**HEP:** Health Extension Program  
**HEP.B:** Hepatitis B  
**Hib:** Hemophilus influenza type b  
**HSDP:** Health service development programme  
**IMNCI:** Integrated Management of Neonatal and Childhood Illnesses,  
**MCH:** Maternal and child health  
**MDG:** Millennium Development Goal  
**MMR:** Mumps, Measles, Rubella  
**MOH:** Ministry of Health  
**NGO:** Non-Governmental Organization  
**OR:** Odd Ratio  
**SPSS:** Statistical Package for Social Science  
**WHO:** World Health Organization?

## 1. Introduction

### 1.1 Background

The World Health Organization (WHO) identified the need for public health intervention and in 1974 initiated the Expanded Programme of Immunization (EPI), which aims to immunize, and thus protect, mothers against Tetanus and their children against the following six deadly diseases: Childhood Tuberculosis, Poliomyelitis, Diphtheria, Pertussis, Measles and Tetanus [1].

WHO Expanded WORLD HEALTH, Jan./Feb. 1987 Programme on Immunization in 1974, moving forward with the strengthening of primary health care, there have been major public gains? The lives of some 800,000 infants are saved every year in developing countries, where child, vaccine and health worker can be brought together. The World Health Organization is particularly grateful to UNICEF, whose active support to achieve universal child immunization by 1990 has been and will remain of critical importance for the success of this programme. To offer the chance of a lifetime to all the children of the world will call for the informed cooperation of the people, the unwavering commitment of leaders, the devotion of health workers, the loving care and intelligent interest of parents, and

the raising of the necessary funds and materials. Immunization is truly -a chance for every child. six particular diseases share two outstanding features in they kill young children- and young children can be protected against them by vaccinations. These six are the target diseases of WHO's Expanded Programme on Immunization (EPI), and of UNICEF's Universal Childhood Immunization (UCI); measles, poliomyelitis, diphtheria, pertussis (whooping cough), tetanus and tuberculosis [2]. Childhood vaccination is an important and effective way to reduce childhood illness and death. However, many children do not receive the recommended vaccines, because their parents or caregivers do not know why vaccination is important, do not understand how, where, or when to get their children vaccinated, or have concerns or doubts about vaccine safety and efficacy [3]. The Ethiopian immunization implementation guideline has been revised in 2015. Children of under-one year of age and women of reproductive age group (15-49 years age) are the targets for the currently available EPI vaccines in Ethiopia (BCG, Measles, DPT-HepB-Hib or penta- valent, Rotavirus, Pneumococcus vaccine (PCV), OPV and TT). Moreover, it is directed in the implementation guideline to introduce Inactivated Polio Virus (IPV), measles-rubella, meningitis and yellow fever vaccines for less than one-year children and Human Papilloma Virus (HPV) and Td vaccines between 2015 to 2019. The country's immunization schedule for the above listed vaccines strictly follows the WHO recommendations for developing countries. Although no booster doses recommended in routine EPI for childhood immunization, there are periodical supplemental doses for measles and polio [4].

Parental satisfaction with pediatric care is an indicator of provider quality that has been relatively unexplored in relation to childhood immunization. One prior study reported an association between parental satisfactions with pediatric care and up-to-date immunization at 24 months independent of maternal age, race, and education [5]. Research on parental health beliefs and attitudes often assumes that parents decline immunization or are simply less knowledgeable and persistent in the health care setting without also examining their access and timely utilization of well-child care [6].

### 1.2 Statements of the Problem

According to the Ethiopian Demographic and Health Surveys

(EDHS) 2016 report, there were factors that contribute for vaccination dropout in children. About 3 in 10 (31%) of children whose mothers have no education are fully vaccinated compared with more than 7 in 10 (72%) of children whose mothers have more than a secondary education. Similar patterns are observed by household wealth. The survey also indicated that there was a wide variation and discrepancies among regions regarding full immunization coverage ranging from 89% in Addis Ababa to 15% in Afar region [7].

Around 29,000 children die each day worldwide mainly due to vaccine preventable disease most of which occurs in Africa. The disease kills about 470,000 children in Ethiopia per year and it has 30 times more probability of death than a child found in Western Europe [8,10]. In spite of Amhara Regional Health Bureau effort of increasing potential health service coverage to 100% and equipping some facilities beyond the country's standard human power such as health post with nurse, the full immunization coverage is low for the past years. According to EDHS2011 report regions like Addis Ababa, Tigray, Dire Dawa and Harare achieved 78.7, 58.9%, 58.6%, 34.1% respectively. Whereas Amhara had 26.3% in the same year 2011(31). But data from FMOH reported that in 2014 the vaccination coverage in Ethiopia increasing like BCG 99%, OPV3 96%, DPT3 96%, PCV10 96% [9,10]. And according to kombolcha woreda health unit 2013 report the EPI coverage was 89%. However, the level of maternal satisfaction and some contributing factors toward vaccination was an explored [10].

This particular study is conducted to assess the parental satisfaction towards childhood immunization services in Amhara regional state of Bahir Dar town, the reasons for measuring client satisfaction include describing health care service from the client's perspective, measurement of the process of care and evaluation of care as a function of client's satisfaction and the available information on parental satisfaction in Africa as well as in Ethiopia. At last, this study will attempt to close the gap and provide some important data in this area.

### 1.3 Significance of the Study

Information from this study could help people feel more positive about getting their shots, which would increase vaccination rates. Parental satisfaction with pediatric care is an indicator of provider quality that has been relatively unexplored in relation to childhood immunization. The information on parental satisfaction in Africa and Ethiopia is scarce, so this study will attempt to fill the information gap and assist healthcare institutions and stakeholders in identifying the strengths and weaknesses that may either promote or hinder the progress toward the necessary goal. It will also provide baseline data for future research.

## 2. Literature Review

Studies conducted on caregivers' satisfaction on child vaccination services were very scarce including the study area. Therefore, this study was aimed to assess satisfaction and associated factors in vaccination service among infant coupled mothers/caregivers attending at public health centers. A cross-

sectional study was conducted on 404 infant coupled mothers/caregivers from 15 March to 15 April 2018 in the selected health centers of Hawassa city, Southern Ethiopia. A systematic random sampling technique was applied to collect relevant data through exit interview with an interviewer-administered structured questionnaire. The overall proportion of the mothers/caregivers who satisfied with their children immunization service was 76.7%. In addition, 89.7%, 77.1%, 77.2%, 65.8%, and 68.3% were satisfied with conveniences of waiting area, cleanliness of immunization rooms, distance from nearby health center, service providers approach and waiting time to get service, respectively. In addition, caregivers living closer to health centers were 5.9 times more likely to be satisfied than their counterparts, the adjusted odds ratio and 95% confidence interval [AOR and 95%CI: 5.9(1.6–22.4)]. Caregivers who waited for  $\leq 30$  minutes to get service were 7.3 times more likely to be satisfied than those waited for  $>30$  minutes [AOR and 95% CI: 7.3(3.9–13.6)]. The study indicated the overall satisfaction of caregivers concerning vaccination service to be suboptimal. Maternal/caregivers satisfaction plays a great role to follow vaccination schedule properly and completeness of immunization service for their infants[11].

Immunization is one of the most cost-effective public health interventions, with considerable impacts on people's health. Parents' perception of their knowledge, attitude, and satisfaction is an important factor, as they may be targeted by interventions for better immunization coverage. Therefore, this study aimed to assess parents' perceptions in terms of their knowledge, attitude, and satisfaction of the immunization of their children aged less than two years of age, in two cities of Pakistan. A descriptive cross-sectional study was conducted in the vicinity of Rawalpindi and Islamabad from March to August 2019. A semi-structured questionnaire was used for the data collection on a convenient sample of parents. The questionnaire was hand-delivered to the parents by data collectors. Descriptive and inferential statistics were used for data analysis via SPSS version 22. A total of  $n = 382$  respondents were included in the data analysis. Statistically significant differences were found between the parents' knowledge scores and their education levels and monthly incomes ( $p < 0.05$ ). Parents with master's education degrees and low monthly incomes had significantly better knowledge ( $p < 0.05$ ). Additionally, 96.85% of the respondents believed that child immunization was important. In addition, more than half of the respondents (57.58%) thought that the affordability of vaccines was a principal factor for delays in immunization. Although the parents' knowledge regarding the immunization of their children was not adequate, they had positive perceptions toward it[12].

A systematic review of articles on the factors influencing under-five childhood immunization uptake in Africa. Out of 18,708 recorded citations retrieved, 10,396 titles were filtered and 324 titles remained. These 324 abstracts were screened leading to 51 included studies. Statistically significant factors found to influence childhood immunization uptake were classified into modifiable and non-modifiable factors and were further categorized into different groups based on relevance. The modifiable factors

include obstetric factors, maternal knowledge, maternal attitude, self-efficacy and maternal outcome expectation, whereas non-modifiable factors were sociodemographic factors of parent and child, logistic and administration factors. Different factors were found to influence under-five childhood immunization uptake among parents in Africa. Immunization health education intervention among pregnant women, focusing on the significant findings from this systematic review, would hopefully improve childhood immunization uptake in African countries with poor coverage rates[13].

Low measles, mumps and rubella (MMR) immunization levels in European children highlight the importance of identifying determinants of parental vaccine uptake to implement policies for increasing vaccine compliance. The aim of this paper is to identify the main factors associated with partial and full MMR vaccination uptake in European parents, and combine the different studies to obtain overall quantitative measures. This activity is included within the ESCULAPIO project, funded by the Italian Ministry of Health. ORs and CIs were extracted, sources of heterogeneity explored and publication bias assessed. Forty-five papers were retrieved for the qualitative study, 26 of which were included in the meta-analysis. The following factors were associated with lower MMR vaccine uptake: misleading knowledge, beliefs and perceptions on vaccines (OR 0.57, CI 0.37-0.87); negative attitudes and behaviors toward vaccination (OR 0.71, CI 0.52-0.98); demographic characteristics, such as different ethnicity in Southern populations (OR 0.44, CI 0.31-0.61), higher child's age (OR 0.80, CI 0.76-0.85); low socio-economic status (OR 0.64, CI 0.51-0.80), especially low income (OR 0.39, CI 0.25-0.60) and education (OR 0.64, CI 0.48-0.84), high number of children (OR 0.54, CI 0.42-0.69), irregular marital status (OR 0.80, CI 0.66-0.96). The factors explaining heterogeneity were country location, administration modality, collection setting and responses reported on MMR alone or in combination. Findings from this study suggest policy makers to focus communication strategies on providing better knowledge, correct beliefs and perceptions on vaccines, and improving attitudes and behaviors in parents; and to target policies to people of ethnic minority from Southern Europe, low educated and deprived, with higher number of children and non-married marital status[14].

### 3. Objectives

#### 3.1 General Objective

To evaluate parental support for childhood vaccination and the factors that contribute to that support in Bahir Dar health sites in Ethiopia, 2021- 2022

#### 3.2 Specific Objective

1. To determine level of satisfaction of parents.
2. To identify factors related to parental satisfaction.

### 4. Methodology

#### 4.1 Study Area and Period

The study was conducted from July 1 to July 1 (2021- 2022) among parents of children aged 6-23 months attending immunization OPD at Bahir Dar health centers, Ethiopia. Bahir

Dar is the capital city of Amhara National regional state in the Federal Democratic Republic of Ethiopia. It is about 565KMS away from Addis Ababa. According to central statistics authority (CSA) report of the 2007 population census of Ethiopia, population of Bahir Dar city is estimated to be 284,020 among these 149,202 of them are females. The city has one referral Hospital (FHRH), one primary hospital, ten health centers, ten health posts and one family guidance association clinic and other private Hospitals & clinics (Amhara regional health Bureau, 2011 annual report. unpublished.)

#### 4.2 Study Design

A cross-sectional study design was conducted.

#### 4.3 Population

##### 4.3.1 Source Population

All parent's having a child of age 6 months to 23 months, who attend Bahir Dar health center at immunization OPD during the study period.

##### 4.3.2 Study Population

parent's having a child of age 6 months to 23 months, who attends immunization service at selected health center within specified period.

#### 4.4 Eligibility Criteria

##### 4.4.1 Inclusion Criteria

parents of vaccinating children aged 6 months to 23 months.

##### 4.4.2 Exclusion Criteria

- mentally or critically ill parent's
- voluntary non-participation in the study

#### 4.5 Sample Size and Sampling Technique

##### 4.5.1 Sample Size Determination

The sample size is determined by single population proportion formula with the following assumption. The prevalence of parental satisfaction on childhood immunization was 72 % from the study conducted in kombolcha, northern Ethiopia among parent's/caretakers of children aged 6-23 months with 5 % marginal error and 95% confidence interval ( $\alpha= 0.05$ ).

Based on this assumption, the Actual sample size for the study was.

$$n = \frac{(\bar{2})^2 (1 - )}{2} \quad n = \frac{(1.96)^2 * 0.72(1 - 0.72)}{(0.05)^2}$$

Were

n= the required sample size

Z=Standard score corresponding to 95% confidence interval

p= Assumed proportion of fertility desire

d = the margin of error (precision) 5%

since the study population is 940 (number of clients visited the three-health center within one month) which is finite and less than 10000 we reduced the sample size using the reduction formula

Where nf=final sample size

ni=sample size from the formula



$N$ =size of the study population

$$= \frac{n_i}{310} \quad \frac{310}{1+940}$$

$N_f=233$

non response rate 5%=12 then  $n_f= 233+12=245$   $n_f=245$

the sample size is proportionally allocated in three health centers (Han, Bahir Dar, shimbet health center) using the formula

where  $n$ =total sample size to be selected  $N$ =total population

$N_i$ =total population of each health center

$n_i$ =sample size from each health center

So, we allocate the sample size based on monthly patient flow in each health center as in Han health center 51 questionnaire, Bahir Dar health center 68 questionnaire and Shimbet health center 126 questionnaires

#### 4.5.2 Sampling Technique

From Bahir Dar health centers we selected three health centers through simple random sampling the total sample required for the study was divided proportionally according to the number of monthly visitors from the three medical centers. Systematic random sampling technique was used to select the samples and every two parents were selected for data collections until the required sample size reached. The first sample was randomly selected with lottery method.

#### 4.6 Data Collection Process and Instrument

Institutional based structured questionnaire was used for quantitative study. It was prepared in English, and data was collected by self-interview. five final year medical students were participated as the data collectors.

#### 4.7 Data Collection Technique

Data was collected by face-to-face interview using questionnaires.

#### 4.8 Data Quality Control

10% of parents in particular health centers which vaccinating children between the ages of six and 23 months pretested the questionnaire. In order to reduce respondents' recollection bias and because immunization is advised for children between the ages of 6 and 23 months, this age range was chosen. Everyone in the sample received confidentiality assurances, was questioned separately and away from health service professionals, and was encouraged to make honest responses. Nonresponse rate was applied to all incomplete questions. The questionnaire's precision, length, and comprehensiveness were evaluated. A few skip patterns were fixed, and questions that were challenging to ask were rephrased. We coded the questioners in order to prevent duplicate data entry.

#### 4.9. Data Processing and Analysis

Data entry was done via Epidata3.1 then export and analyzed using SPSS version 23. Descriptive statistics was presented using frequencies, proportions and tables. Multivariable analysis was performed following bi variate analysis to adjust for the effect of confounders using multiple logistic regressions, both crude and adjusted odds ratio with 95% confidence interval were reported. Statistical significance was considered at when p value was less than 0.05

#### 4.10 Variables

##### 4.10.1 Dependent Variables

parental satisfaction for vaccine services provided.

##### 4.10.2. Independent Variables

- Socio-demographic factors (age, sex, job, marital status, education)
- Knowledge related factors (awareness, beliefs, attitudes, practices)
- Structure and Process related factors (information, greetings, vaccine harm, schedule, dose, waiting time)
- Access related factors. (Causes, frequency, time taken to clinic, waiting area)

#### 4.11 Operational Definitions

**Immunization:** The procedure of exposing a youngster to a foreign antigen to induce the production of antibodies that aid in the defense against infectious illnesses.

**Exit Interviews:** after exiting the service provider's room, asking the customer about the experience.

**Satisfaction:** Determining the client's opinion regarding the services a health worker has delivered, whether it be favorable or negative.

**The Median:** Determined by selecting the median value after ordering each respondent's response from lowest to highest.

**Satisfied Parent's:** The respondent who scores higher than the median on a particular satisfaction question regarding the service received.

**Knowledgeable Parent's:** Parents who respond with a score above the median to a question on their knowledge of childhood vaccinations.

**Check list:** Omits the standards and just includes general and special sheets with their component and criterion.

**Immunization Schedule:** Is a strategy that specifies the age and proper timing for administering each dose of the necessary vaccinations.

**Full Dose:** BCG and measles in one treatment, DPT and polio in three doses, and PCV and Hib in one dosage. Rotavirus two doses

**Kebele:** Is Ethiopia's tiniest administrative subdivision.

#### 4.12 Ethical Consideration

The Bahir Dar University College of Medicine and Health Science provided ethical clearance. To obtain approval and a letter of support for each health center, an official letter was submitted from the school of medicine to the Amhara Public Health Institute and then to the health department of the Bahir Dar city administration. Participants in the study were informed of the study's objectives, and their signed agreement was

obtained to confirm their willingness to participate. The data were kept confidential and the questionnaire was anonymous and free of any important questions.

## 5. Results

### 5.1 Descriptive Statistics

#### 5.1.1 Socio Demographic Characteristics of the Respondent

244 of the 245 parents were included in the study, yielding a response rate of 99.6%. The majority (84.8%) of the respondents were between the ages of 24 and 34, and 243 (99.6%) of the respondents were female. 228 (93.4%) were married, and 158 (64.8%) were housewives. 207 (84.8%) were Orthodox and around 78 (32%) of the respondents went to secondary school.

Variable	Categories	Count	N %
age of the parent	≤24years	21	8.6%
	25-34years	207	84.8%
	35-44years	16	6.6%
religion of the respondent	Muslim	31	12.7%
	Orthodox	207	84.8%
	Protestant	6	2.5%
family size of the respondent	0-3children	125	51.2%
	4-6children	113	46.3%
	7-10children	6	2.5%
educational status of the respondent	Illiterate	38	15.6%
	Primary	54	22.1%
	Secondary	78	32.0%
	Diploma	41	16.8%
	Degree and above	33	13.5%
occupational status of the respondent	Housewife	158	64.8%
	Unemployed	1	0.4%
	Merchant	26	10.7%
	Farmer	5	2.0%
	Government employ	44	18.0%
	Others	10	4.1%
marital status of the respondent	Married	228	93.4%
	Unmarried	16	6.6%

**Table 1: socio demographic characteristics of parent’s attending immunization service unit, Bahir Dar, Ethiopia, 2021-2022- N=244**

#### 5.1.2 Parental Knowledge Score

Out of 244 parents, 188 parents (77.0%) had heard of EPI target diseases, and 236 (96.7%) were aware of illnesses that can be prevented by immunization. The majority of parents,

240 (98.3%), think that vaccinating nursing children is vital. The majority of parents, 243 (99.6%), agreed to give their child the full dose of vaccines, and 239 (98%) adhered to their appointment schedule.

	Yes		No	
	Count	N %	Count	N %
heard about epi target disease	188	77.0%	56	23.0%
possible to protect infectious disease by vaccine	236	96.7%	8	3.3%
Is there an ability to vaccination of a youngster does breast-feeding	240	98.3%	4	1.7%
do you agree to vaccinate your baby full dose	243	99.6%	1	0.4%
do you keep your appointment schedule	239	98.0%	5	2.0%

**Table 2: parental Knowledge score in attending immunization service units, Bahir Dar, Ethiopia, July 2021 to 2022, N=244**

### 5.1.3 Accessibility of Services

In terms of the frequency of visits, 73.4% parents made 1-5 times center visit and 26.6% had >5 visits to the centers during the course of the previous year. In terms of the centers' accessibility, 196 (80.3%) of the parents had to wait longer than 30 minutes

to get their children's shots. 127 parents (52.0%) spent 5-10 minutes getting their children immunized, 24.6% spent less than 5 minutes, and 23.4% spent more than 10 minutes. The vaccine was free of charge.

		Count	N %
Frequency of visit	1-5	179	73.4%
	6-7	65	26.6%
waiting time	<15	12	4.9%
	15-29	36	14.8%
	30-60	196	80.3%
time taken for vaccination	5mints	60	24.6%
	5-10mints	127	52.0%
	>10mints	57	23.4%
payment for vaccination	Yes	0	0.0%
	No	244	100.0%

**Table 3: Accessibility factors of service of parents in Bahir Dar, Ethiopia, July 2019, N=244**

### 5.1.4 The Level of Parental Satisfaction Towards Child Hood Immunization on Structural and Process Factors

When we see the level of satisfaction of parents towards childhood immunization on the structure and process factor, 83.3% are satisfied with the overall rating of the health team service, 54.5% are satisfied with explanation of procedures 15.2% are very satisfied and 63.1% are satisfied with the respect

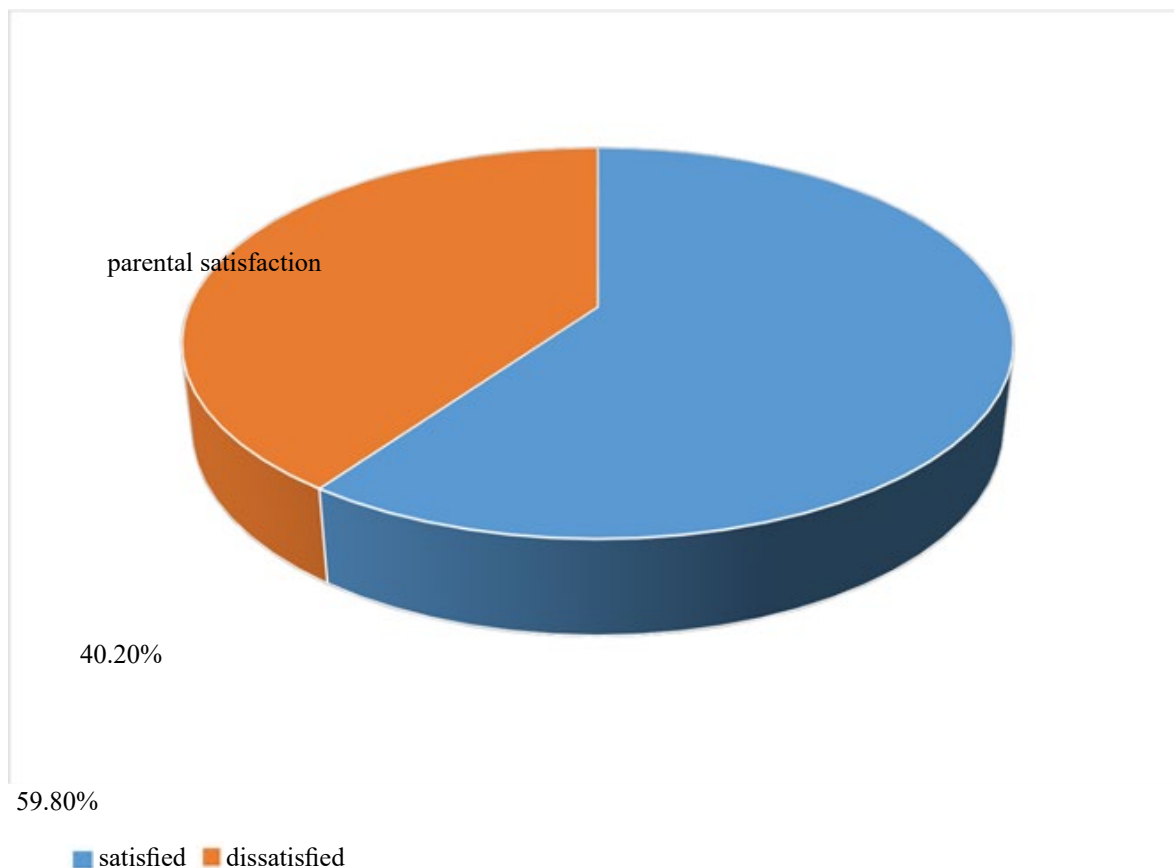
and courtesy they were given. 52.8% of parent's were satisfied with the information they were provided and 86% were satisfied with the skills of the service providers. And 82.8% are satisfied with overall rating of the facility, about 62% are satisfied with the cleanliness and comfort of the health center, around 65% are satisfied with the availability of vaccines.

	Very		Dissatisfied		Satisfied		very satisfied	
	N	%	N	%	N	%	N	%
Overall rating of health team service	3	1.2	37	15.2	188	77.0	16	6.6
Explanation of procedure	4	1.6	107	43.9	111	45.5	22	9.0
Courtesy and respect	12	4.9	41	16.8	154	63.1	37	15.2
Information given	18	7.4	97	39.8	114	46.7	15	6.1
Skill of provider	0	0	34	13.9	198	81.1	12	4.9
Overall rating of the facility	3	1.2	39	16.0	186	76.2	16	6.6
Ease of access of the facility	11	4.5	56	23.0	155	63.5	22	9.0
Cleanliness and comfort	13	5.3	78	32.0	116	47.5	37	15.2
Availability of vaccine	20	8.2	64	26.2	108	44.3	52	21.3
Tools and equipment availability	4	1.6	27	11.1	172	70.5	41	16.8

**Table 4: parental level of satisfaction on structure and process factors in the health centers in Bahir Dar, July 2021 to 2022, N =244**

### 5.1.5 Level of Parental Satisfaction

This figure depicts the amount of parental satisfaction, which is 59.8%.



**Figure 1:** shown the level of parental satisfaction towards childhood immunization in Bahir Dar, Ethiopia, July2021 to 2022, N=244

## 5.2. Bivariant and Multivariant Analysis

### 5.2.1 Logistic Regression Analysis for Socio Demographic Characteristics

factors influencing parents' attitudes on kid vaccination. The statistically significant significance level is set at p 0.05. The findings showed that parental sociodemographic variables did not substantially predict parental satisfaction with immunization

services ( $p > 0.05$ ). Parental satisfaction was not significantly influenced by factors like parental age, family size, marital status, or religion. Other factors including occupation  $AOR = 1.470(0.62, 3.488)$ , birth order  $AOR = 1.608(0.653, 3.962)$ , educational status of the parent's  $AOR = 1.587(0.571, 4.412)$ , were also unrelated to parental satisfaction.

		Satisfaction				COR with CI 95%	AOR with CI 95%
		Dissatisfy		Satisfied			
		Count	N %	Count	N %		
Age of the parent	≤24	6	6.1%	15	10.3%	0.570(0.213,1.523)	
	>24	92	93.9%	131	89.7%		
Religion	Orthodox	86	87.8%	121	82.9%	1.481(0.705,3.109)	
	Others	12	12.2%	25	17.1%		
Family size	≤3	52	53.1%	74	50.7%	0.909(0.545,1.518)	
	>3	46	46.9%	72	49.3%		
Birth order	<3	90	91.8%	124	84.9%	1.996(0.850,4.686)	1.608(0.653,3.962)
	≥3	8	8.2%	22	15.1%		
Occupation	Housewife	67	68.4%	91	62.3%	0.458(0.185,1.135)	1
	Gov-employ	20	20.4%	25	17.1%		1.470(0.620,3.488)
	Others	11	11.2%	30	20.5%		2.032(0.919,4.491)



Marital status	Married	90	91.8%	138	94.5%		
	Single	8	8.2%	8	5.5%	1.533(0.556,4.232)	
Educational status of the respondent	Illiterate	10	10.2%	28	19.2%	2.333(0.862,6.314)	2.336(0.715,7.629)
	Primary	21	21.4%	33	22.6%	1.310(0.545,3.147)	1.590(0.566,4.463)
	Secondary	30	30.6%	48	32.9%	1.333(0.585,3.037)	1.587(0.571,4.412)
	Diploma	22	22.4%	19	13.0%	0.720(0.287,1.806)	0.757(0.279,2.053)
	Degree and above	15	15.3%	18	12.3%		1

**Table 5: Logistic regression analysis for factors associated with socio demographic characteristics and parent's satisfaction, Bahir Dar, Ethiopia, July 2021 to 2022: N=244**

### 5.2.2 Logistic Regression Analysis for Accessibility Factors

To demonstrate the relationship between accessibility criteria and parental satisfaction levels, we used logistic regression analysis. Regularity of visits and length of procedure

AOR=1.244(0.663, 2.333) did not show any correlation. Waiting time (p value=0.042) and AOR=2.138(1.052, 4.347) from the numerous accessibility characteristics evaluated were related to parental satisfaction.

		Satisfaction				P value	COR (95%CI)	AOR (95%CI)
		Dissatisfied		satisfied				
		Count t	N %	Count t	N %			
Frequency of visit	≤5	72	73.5%	107	73.3%	0.975	1.009(0.566,1.801)	
	>5	26	26.5%	39	26.7%	1	1	
Waiting time	≤30	13	13.3%	35	24.0%	0.042	2.062(1.027,4.137)	2.138(1.052,4.347)
	>30	85	86.7%	111	76.0%	1	1	1
time taken for	5mints	28	28.6%	32	21.9%	1	1	1
vaccination	5-10mints	50	51.0%	77	52.7%	0.345	1.347(0.725,2.504)	1.244(0.663,2.333)
	>10mints	20	20.4%	37	25.3%	0.204	1.619(0.769,3.405)	1.702(0.804,3.602)

**Table 6: logistic regression analysis to show accessibility factors associated with parental satisfaction Bahir Dar, July 2021 to 2022, N=244**

## 6. Discussion

The current study attempted to assess parental satisfaction level and the important predictors that could contribute for improved utilization of childhood immunization. The level of parental satisfaction observed in this study was lower than the study done in kombolcha, Northern Ethiopia (59.8%,71.9%). The differences are attributed due the difference in setup, quality care and respondent's attitude and perception [15]. But it was higher than the study done in jigjig a (59.8% vs 53.2%) and the observed differences might be explained by the fact that the study populations in Jigjig a were more of pastoralist and the chance of skipping the services is high [16]. When compared with some elsewhere studies done in Egypt (59.8% vs 95.2%), Nigeria (59.8% vs 95.9%), the present finding was low and the differences could be attributed due the differences in the setup of the vaccination services in the case of Egypt, difference in method and set up in case of Nigeria were cited as some of the important factors [17,18]. some causes of satisfaction were tools and equipment availability (87.3%), overall health

team service (83.6%), overall facility workup (82.8), and courtesy and respect (78.3%). some causes of dissatisfaction were information given on vaccination (47.2), explanation of procedure (45.5%), and environment cleanliness and comfort (37.3%). cause of satisfaction in Nigeria drug availability, environment appearance and cause dissatisfaction clinic hours, date of immunization, location of clinic was 75%. In India cause of satisfaction were availability of service, interpersonal quality, professional competency and cause of dissatisfaction skill of health workers, waiting time, fulfillment of health facility and equipment, efficiency to treatment [15].

According to UNICEF most cause of dissatisfaction were absence of health workers, poor staff attitude, distance, lack of drug, long waiting time. In this study, the majorities of parent's were above 24 years old and had completed primary/secondary or higher education. This finding is concordant with the study done in Congo where 95.0% of parent's age was above 20 years and 81.6% of parent's educational level was Primary/Secondary

education. Likewise, the findings in Egypt and Nigeria also concur with the present findings in terms of age and education [21].

In the current study (85.6%) of parent's, were knowledgeable about childhood immunization and it is in conformity with the study done in Thailand which showed 82.4% of parents who had adequate knowledge used the service [12].

In this study, access factors were significantly associated with parental satisfaction level; activities like waiting time and time taken for vaccination have significant association with parental satisfaction. Respondents who wait less than 30 minutes for vaccination (AOR: 2.138, 95% CI :( 1.052- 4.347)) were two point one times more likely satisfied than respondents who wait more than 30 minutes. Respondents who wait 5 to 10 minutes time taken for vaccination (AOR=1.214, 95% CI=(0.663-2.333) were one point two times satisfied than the time who takes more than 10 minutes. Waiting time had significant association with parental satisfaction, majority of parent's (80.3%) have waiting time more than 30 minutes which is too much compared to a study done in Bangladesh which was 10 min low accessibility of health centers may be the cause, Regarding time spent in examination in this study majority respondents (52.4%) were spent 5-10 minutes, which is concordance with the study done in Bangladesh which reported that 52.7% of the case spending 5-9 minutes in examination [12,15]. Similarly, the study in Egypt documented that time spent in examination; 39.5% of cases spent 5-9 minutes indicating better performances and the possible explanation for the difference is that in Ethiopia, no screening of child is done, no vaccine education given during the procedure and mass administration of vaccine (five children in examination room once) is the common experience [12]. In this study, most parents were satisfied with different aspects of care. The highest average mean scores were for tools and equipment availability (87.3%), overall health team service (83.6%), overall facility workup (82.8%) and courtesy and respect (78.3%). The observed low mean score observed in the present score may be overcome by generating high level of knowledge and awareness among the parents through encouraging parental active participation and motivating the health staffs to meet the objective of the health center by providing quality health services [19,20-26].

## 7. Conclusion

The study finds that while parental satisfaction with the childhood immunization program was of a medium scale. Immunization access, process, and structural factors were related to it..

□ Waiting time for the service was significantly associated with parental satisfaction towards childhood immunization

□ Tools and equipment availability, overall health team service, overall facility workup and courtesy and respect given were significantly associated with parental satisfaction

## 8. Recommendation

For institutions/stakeholder/

□ In order to maximize and optimize parental satisfaction, EPI service hours should be extended and fixed day should be

avoided.

□ Separate waiting and examination room should be organized for EPI.

□ Health facilities should improve on the service process system like greeting, quality cares, cleanness of room, reduce waiting time, crowdedness in the card room, give health information and education on vaccine, and provide immunization services every day.

□ Vaccine information should be delivered every day before vaccination started.

□ Parents should be educated on the event of vaccine-induced adverse reaction.

□ To reduce the waiting time and improve the parental satisfaction, it is necessary to increase the number of staff in the health centers as well as availability of more rooms.

Strength of the study

□ Factors that have a potential to influence parental satisfaction level were included and multivariable regression analysis was used to control the confounder.

□ There was high response rate.

Study's limitations include:

□ parents may also want to answer according to what they think are socially acceptable and introduce information bias. These conditions can either cause overestimation or underestimation of effects.

□ Other limitations were unavailability of researches to the related topics for comparison

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