Original Research Article

Clients` Satisfaction and Barriers towards Childhood Immunization Service in Primary Health Care Facilities in Tanta, Egypt

ABSTRACT

Aims: To assess the clients` satisfaction towards childhood immunization service among parents having children aged less than 2 year in primary health care settings, and to highlight barriers affecting client satisfaction with immunization services in primary health care facilities.

Study design: Cross-sectional study

Place and Duration of Study: Three primary health care facilities in Tanta Egypt; Said Health Care Center, Elragdia Health Care Unit, and MahaletRouh Health Care Unit**,** between March 2021 and April 2022.

Methodology: We included 400 clients coming to the primary health care facilities during the vaccination sessions of their children less than 2 years of age. Participants' data were collected using a pre-designed interviewing validated questionnaire sheet through interview that assessed the sociodemographic data, knowledge, satisfaction, and barriers toward ~~the~~ childhood vaccination.

Results: In this study, the majority (87.8 %) were recruited from Said Health Care Center. The clients' ages ranged from 19 to 70 years, with the highest percentage in the age group of 20 – <40 (78.3%). The clients' knowledge score ranged from 1 to 9, with a median of 7 denoting ~~an~~ overall good knowledge. The highest percentage of clients in Said Health Care Center dissatisfied (78.9%) while the highest portion of clients in Elragdia Health Care Unit and MahaletRouh Health Care Unit satisfied (75% and 60%, respectively). The relation to child, level of education, health care facility, followed by marital status, income, residence, child sex, total knowledge score, and child age were found to be statistically significant predictors for the satisfaction, with *P* values of 0.002, 0.004, <0.001, 0.006, <0.001, <0.001, 0.01, <0.001, and <0.001, respectively. **Conclusion:**an overall good knowledge as shown among caregivers attending for children vaccination. The least satisfaction rates were noted in the Urban Health Care Center. Clients' knowledge beside some sociodemographic data significantly affected clients' satisfaction.

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Keywords: childhood vaccination, clients, knowledge, satisfaction, barriers

1. INTRODUCTION

Children are the nation's future, thus investing in their development is just as important as investing in other resources. Immunization is essential to a child's healthy development. Utilizing vaccines to immunize people against the most contagious diseases is an easy, safe, and effective method. Immunization prevents diseases from spreading and shields society from dangerous diseases [1]. The advantages of vaccines generally extend beyond health and include advantages in the areas of economy, education, health security, and other factors [2].

The children will benefit more from the immunization process if they receive the entire course of advised immunization doses [3]. There are significant regional and national differences in

the rates of childhood immunization. While being vaccinated remains difficult, acceptance of vaccination is also a problem that affects uptake and is influenced by a person's attitudes, sentiments, and beliefs [4].

Receiving services of vaccination depends not only on their availability but also on a number of other elements, such as the mothers' knowledge and attitudes and the effectiveness of the medical staff. A satisfied client is expected to build a strong and lasting relationship with their healthcare practitioner, which will ultimately result in better adherence, continuity of care, and health outcomes [3].

The aim of this work was to assess the clients` satisfaction towards childhood immunization service among parents having children aged less than 2 year in primary health care settings, and to highlight barriers affecting client satisfaction with immunization services in primary health care facilities.

2. SUBJECTS AND METHODS

This is a cross-sectional study that was conducted during the period from March 2021 to April 2022. The study participants were recruited from three selected primary health care facilities; Said Health Care Center, representing urban facilities because it serves the largest number of the target population, Elragdia Health Care Unit and MahaletRouh Health Care Unit**,** representing rural facilities because they are among the largest rural primary health care units in 2nd Tanta district regarding the target age group according to demographic data of Tanta Health Administration 2020. Clients coming to the primary health care facilities during the vaccination sessions of their children less than 2 years of age were the study population. Approval was obtained by the study participants.

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The sample size was calculated using the EPI info program using EPI info 7 software developed by Center for Disease Control and the World Health Organization (WHO).(104) Sample size calculation with hypothesized outcome as 63 % of satisfaction rate [5],estimated 340 clients as the required study sample, this number was increased to 400 clients for better accuracy. The number of required sample from each of the medical health units was calculated according to the number of served population. A systematic random sample of attendants was followed. Every third client was interviewed after receiving the service to ascertain the levels of satisfaction with the health care service.

Data were collected using a pre-designed interviewing validated questionnaire sheet through interview. A pilot study was performed initially to assess the applicability of the questionnaire. The questionnaire was developed in English and then translated to Arabic language. It was divided into 3 sections and used to collect the Sociodemographic data, the knowledge about the Expanded Program of Immunization (EPI), benefits, contraindications, side effects and time of vaccination, the satisfaction, and barriers towards the immunization service.

2.1 SCORING OF PARTICIPANTS KNOWLEDGE

The knowledge assessment consisted of 9 questions; each of them was scored by one mark. If the answer was right so the client score was 1, and if the answer was wrong or no answer, the client score was 0. The threshold knowledge score was identified using the threshold formula [5], where threshold score = ([total maximum score - total minimum score] / 2) + Total minimum score. Then the participants' knowledge was categorized as poor knowledge or good knowledge.

2.2 SCORING OF PARTICIPANTS' SATISFACTION

During satisfaction assessment, each of the assessed item was scored by five marks. The answer was "Very dissatisfied, Dissatisfied, Neutral, Satisfied, Very satisfied" so the client score was 1ranging from 1 to 5. The threshold satisfaction score was identified using the threshold formula [5]. Then the participants' satisfaction was dichotomized into satisfied or not satisfied.

2.3 STATISTICAL ANALYSIS

The participants' was analyzed using SPSS version 26.0 (IBM Corp., Armonk, NY, USA). Quantitative data were described using range mean, standard deviation, median and interquartile range (IQR). Qualitative data were described using numbers and percentages. Chi-square test was used to compare categorical variables between different groups. After normality testing, Mann Whitney / Kruskal-Wallis tests were used for comparison of the quantitative variables between two or more groups. Logistic regression analysis was performed to assess predictors of satisfaction levels. The result was considered as statistically significant if *P* value < 0.05.

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3. RESULTS AND DISCUSSION

The sociodemographic characteristics of the study participants are shown in table 1.

Table (1): Socio-demographic characteristics of the study participants

Item	Number (%) (n=400)
PHC facility name	
Said Health Care Center	351 (87.8)
Elragdia Health Care Unit	24 (6)
MahaletRouh Health Care Unit	25 (6.3)
Participant age (years)	
<20	17 (4.3)
20 – <40	313 (78.3)
40 – <60	51 (12.8)
>60	19 (4.8)
Min. – Max.	19-70
Relation to child	
Father	69 (17.3)
Mother	225 (56.3)
Grandfather	28 (7)
Grandmother	24 (6)
Uncle	16 (4)
Others	38 (9.5)
Marital status	
Married	337 (84.3)
Divorced	26 (6.5)
Widowed	37 (9.3)
Educational level	
Postgraduate	21 (5.3)
University	173 (43.3)
Secondary school	124 (31)
Read and write	38 (9.5)
Illiterate	44 (11)
Occupation	
Employee	145 (36.3)
Professional	11 (2.8)
Manual work	79 (19.8)
Not working / House wife	165 (41.3)
Income	
Enough	205 (51.2)
Enough and saving	32 (8)
Not enough	163 (40.8)
Child sex	
Female	242 (60.5)
Male	158 (39.5)
Child age (months)	
<10	272 (68)
10 – <20	110 (27.4)
20 – <24	18 (4.5)
Min. – Max.	0 - 24

The clients' knowledge score ranged from 1 to 9, with a median of 7 denoting an overall good knowledge. The highest percentage of the participants were aware about the possibility to vaccinate a breast feeding child (91.3%) and the least percentage (59.8%) were aware of the vaccination schedule.

Application of the threshold equation: ([9-1]/2)+1=5 resulted in classifying the final score as poor knowledge (≤ 5), and good knowledge (>5). More than two thirds of the patients had a good knowledge (69.5%). Comparison among the three studied health facilities is presented in table 2.

Table (2): Frequency distribution of the participants' characteristics according to the level of Knowledge

Knowledge level	Said Health Care Center	Elragdia Health Care Unit	MahaletRouh Health Care Unit	Total
Poor knowledge (≤ 5): N (%)	106 (30.2)	11 (45.8)	5 (20)	122 (30.5%)
Good knowledge (>5): N (%)	245 (69.8)	13 (54.2)	20 (80)	278 (69.5%)
χ2			3.98	
P			.14	

χ2: Chi square test.

Concerning satisfaction towards waiting time and place, the least percentage of the participants' satisfaction was towards the cleanliness (75%, 68%, and 43% in the three centers, respectively), and comfortability of the waiting room (75%, 68%, and 38.5% in the three centers, respectively). Statistically significant differences were found in the satisfaction towards waiting room cleanliness and comfortability, the presence of educational tools and the overall satisfaction, with the least satisfaction rates found in Said Health Care Center (*P*<.05). Assessment of the studied sample's satisfaction toward the accessibility to the service and the resource availability showed that the least percentage of the participants' satisfaction was towards the proper distance between waiting room and vaccination room (75%, 68%, and 33.9% in the three centers, respectively). Statistically significant differences were found in the satisfaction towards the distance between waiting room and vaccination room, with the least satisfaction rates found in Said Health Care Center (*P*<0.05). As for the studied sample satisfaction toward vaccination session, the least percentage of the participants' satisfaction was towards the adherence of the healthcare workers (HCWs) to the protective equipment (70.8%, 68%, and 37% in the three centers, respectively), and the recording of the visit in the participant folder (70.8%, 68%, and 42.2% in the three centers, respectively). Statistically significant differences were found in all the domains, with the least satisfaction rates found in Said Health Care Center (*P*<.05).

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Concerning satisfaction toward HCWs performance, a rather high percentage of satisfaction was shown in each domain. Statistically significant differences were found in all the domains, with the least satisfaction rates found in Said Health Care Center (*P*<.05). Evaluation of the studied sample satisfaction toward immunization services demonstrated a rather high percentage of satisfaction in each domain. Apart from getting happy after the child being vaccinated, statistically significant differences were found in all the domains, with the least satisfaction rates found in Said Health Care Center (*P*<.05).

The highest percentage of satisfaction was towards time and place, and the least percentage of satisfaction was towards the vaccination session.

Regarding satisfaction scores, the highest total score was 120, the lowest score was 59. So, according to the threshold equation: ([120 - 59]/2) + 59 =89.5≈ 90, the clients' overall satisfaction towards childhood immunization was categorized / dichotomized into satisfied (≥ 90) or dissatisfied (< 90). Distribution of participants' sociodemographic characteristics according to their overall satisfaction state is demonstrated in table 3.

Table (3): Frequency distribution of the overall satisfaction state according to participants' characteristics.

Item	Satisfied (≥ 90) N (%)	Dissatisfied (< 90) N (%)	Test	*P*
PHC facility name				
Said Health Care Center	74 (21.1)	277 (78.9)	48.4 χ2	<.001*

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Elragdia Health Care Unit	18 (75)	6 (25)		
MahaletRouh Health Care Unit	15 (60)	10 (40)		
Participant age (years)				
<20	1 (5.9)	16 (94.1)	11.8 χ2	.008*
20 – 40	83 (26.5)	230 (73.5)		
40 – 60	21 (41.2)	30 (58.8)		
>60	2 (10.5)	17 (89.5)		
Relation to child				
Father	24 (34.8)	45 (65.2)	50.1 χ2	<0.001*
Mother	66 (29.3)	159 (70.7)		
Grandfather	0 (0)	28 (100)		
Grandmother	16 (66.7)	8 (33.3)		
Uncle	1 (6.3)	15 (93.8)		
Others	0 (0)	38 (100)		
Residence				
Urban	32 (17.5)	151 (82.5)	14.8 χ2	<.001*
Rural	75 (34.6)	142 (65.4)		
Marital status				
Married	101 (30)	236 (70)	12.1 χ2	.002*
Divorced	4 (15.4)	22 (84.6)		
Widowed	2 (5.4)	35 (94.6)		
Educational level				
Postgraduate	1 (4.8)	20 (95.2)	33.4 χ2	<.001*
University	54 (31.2)	119 (68.8)		
Secondary	47 (37.9)	77 (62.1)		
Read and write	4 (10.5)	34 (89.5)		
Illiterate	1 (2.3)	43 (97.7)		
Occupation				
Employer	43(29.7)	102 (70.3)	9.9 χ2	.042
Professional	1 (9.1)	10 (90.9)		
Manual work	14 (17.7)	65 (82.3)		
Not working / Housewife	49 (29.7)	116 (70.3)		
Income				
Enough	33 (16.1)	172 (83.9)	28.9 χ2	<0.001*
Enough and saving	17 (53.1)	15 (46.9)		
Not enough	57 (35)	106 (65)		
Child sex				
Female	76 (31.4)	166 (68.6)	6.8 χ2	.009*
Male	31 (19.6)	127 (80.4)		
Child age (months)				
<10	56 (20.6)	216 (79.4)	42.2 χ2	<.001*
10 – <20	35 (31.8)	75 (68.2)		
20 – <30	16 (88.9)	2 (11.1)		

*χ2: Chi square test, *: statistically significant. Percentages were calculated according to the number of participants recruited from each health care unit.*

The relation to child, level of education, health care facility, followed by marital status, income, residence, child sex, total knowledge score, and child age were found to be statistically significant predictors for the satisfaction, with *P* values of.002,.004, <.001, .006, <.001, <.001, .01, <.001, and <.001, respectively. The factors were implemented in a multiple regression test. The variables were found to be still significant were the health care facility, income, education, the total knowledge scores, and child age with p values of <.001 for all of them.

Finally, concerning barriers to immunization, the highest percentage of participants in Elragdia Health Care Unit agreed for “The distance between the PHC center and their house” and the “Means of transport availability” as being barriers against immunization (16.7% for each). In MahaletRouh Health Care Unit, the highest percentage (8%) agreed for “Means of transport availability” as the barrier for immunization, while in Said Health Care Center, the highest percentage described “HCWs are not efficient” (63.2%) and “The distance between the PHC center and their house” (25.4%) as barriers. There was a significant association between distance from Health Center and houses of the clients as s barrier against satisfaction of the clients, with the highest frequency among clients of Said Health Care Center (25.5%).

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4. DISCUSSION

Vaccines have transformed public health in terms of prevention of several compromising infective disease [6]. Egypt has made considerable strides in the prevention and control of preventable diseases through immunization. More than 95% of the population received their third dose of the diphtheria, pertussis, and tetanus vaccine as part of routine immunization

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coverage [7]. According to the Egyptian Prime Ministry officials, as of 2021, routine immunization coverage with all the obligatory vaccines reached more than 95% of the population [8].

In the context of the participants' knowledge, the present study revealed an overall good knowledge of the participant clients with more than two thirds of the patients had a good knowledge (69.5%). In agreement with our findings, in the study of Ali et al (2016), mothers had good knowledge regarding the doses timing [9]. Also, in the study of Uwaibi&Akhimienho (2020) that was recently conducted in Nigeria, all caregivers had knowledge about routine childhood vaccination [10], and in the study of Masadeh et al (2014), the participants had good knowledge about the obligatory vaccines [11]. This is in congruent also with the observed high maternal awareness of immunization in another Nigerian study [12]. Our findings are also supported by the study conducted in Saudi Arabia, and found that the majority of parents had good knowledge toward vaccination importance and efficiency [13]. In the same respect, most of parents had vaccinated their children according to the MOH vaccination schedule in Al-Madinah Al-Monawara in KSA [14]. Previous studies in Ko India and Georgia also found good knowledge among the most of the participants [15,16].

On the other hand our findings were different from what was found by El Gammal (2014) and Debela et al (2022) in Egypt and Ethiopia who observed low knowledge levels among the studies participants [17,18].The difference is likely due to the health education provision gaps in the earlier Egyptian study and the Ethiopian study.

The poor knowledge regarding vaccine contraindications (47.5%) that was found in the present study is explained by that the HCWs pay more care to inform the mothers the vaccination time and importance, but not necessarily educating them the vaccines contraindications.

Concerning clients' satisfaction in the current study, the analysis of each item revealed that the levels of satisfaction ranged from 70.8% to 75% in Elragdia Health Care Unit, from 60% to 68% in MahaletRouh Health Care Unit, and from 20.5% to 63.8% in Said Health Care Center. These levels are comparable with the study of Dana et al (2020) who reported that the level of mothers' satisfaction toward child immunization was 76.7% [19]. This finding was relatively higher than the study conducted by Salah et al (2015) that was 53.3% [20]. Other studies in Nigeria by Timane et al (2017) [21], and India by Amin et al (2013) [22], reported caregivers' satisfaction of 96.7% and 97%, respectively. These higher rates could be attributable to the used tool, the classification of satisfaction, and the subjective nature of the respondents.

In our study, the majority of clients were satisfied with the waiting time, and waiting room ranging up to 79%. In accordance with our findings, GebreEyesus et al (2020) declared that the majority of participants were satisfied with waiting and vaccine intake times [23]. Also, in the Egyptian study of Salem et al (2018) satisfaction was 80.8% for the place and time of service [24].

The present study revealed that the least percentage of the participants' satisfaction was towards the cleanliness, and comfortability of the waiting room. In consistency with such findings, the results of Udonwa et al (2010) showed that low satisfaction rates towards waiting room cleanliness [25]. Cleanliness of the environment is a well-established contributor to quality of offered service and in turn clients' satisfaction. This was found to be true in an Indian study where the workings of an Immunization [26].

The present study revealed that the satisfaction towards easiness to reach the vaccination room ranged from 95.4% to 100%, satisfaction towards distance between waiting room and vaccination room ranged from 33.9% to 75satisfaction towards vaccine availability ranged % from68% to 87.5%, and satisfaction toward availability of syringes used in injection the vaccine ranged from 64% to 80.6%.Comparable findings were published byDana et al. (2020) who foundthe clients satisfaction towards distance to vaccination room to be 65.2% and that of the vaccine and syringes availability to be 94.2% [19]. Also, Udonwa et al (2010) found that the satisfaction rate towards access to services was 81.4% [24]. Salem et al (2018) reported satisfaction with the service by the percentage of 77.8% [24].

The current study showed that the majority of clients were satisfied with HCWs` follow of the infection control guidelines and adherence to personal protective equipment, the satisfaction towards the HCWs recording the visit in the client folder ranged from 42.2% to 70.8%. In agreement with our results the Egyptian study of Dewedar et al. (2016) reported a percentage of HCWs maintenance of aseptic technique during the vaccination time of 87.5%, a percentage of 50% for using gloves during vaccination, and a percentage of 100% for recording the vaccination visit in the client file [27].

Concerning satisfaction toward HCWs performance high percentage of satisfaction was shown in each domain. The satisfaction rate for HCWs examination of child before the vaccination ranged from 66.1% to 96%, the satisfaction rate for HCWs calling when the client missed the session ranged from 82.6% to 100%, the satisfaction rate to HCWs information about the dose of the vaccine, the EPI, and how to manage post vaccine fever ranged from 62.4% to 100%. Accordingly, the study of Dana et al (2020) reported the satisfaction rate for HCWs calling when the client missed the session of 92.6%, which is in the range found by this study [19].

In congruence with our findings, the study of Ali et al (2016) reported that the mothers' satisfaction rate toward the information presented by the HCWs about preventable diseases, doses, side effects, and importance of vaccines was 75.5% [9].GebreEyesus et al (2020) reported that the clients' satisfaction toward the offered information was 76.5% [23].El Gammal (2014) found that satisfaction about information giving was 61% [17], comparable ranges were found in Kombolcha (72%) [15],Jigjiga (69.6%) [20], and Timor-Leste (35%) [22].It's crucial to streamline the working environment for HCWs to facilitate client flow, save time, and, as a result, free up more time for client health education and interactions with healthcare providers [26].

As for satisfaction toward immunization services, the satisfaction rate towards listening to complaint and polite reply of the HCWs ranged from 66.7% to 100%. The satisfaction rate as getting happy after having the child vaccinated ranged from 82.5% to 96%, the satisfaction rate towards greeting by HCWs ranged from 63.2% to 100%, and the satisfaction rate towards respecting confidentiality ranged from 74.6% to 100%. Our rates were higher than Udonwa et al (2010) study which showed that 49% of the clients were satisfied towards greeting by HCWs and 34.6% were satisfied towards listening to complaint and polite reply of the HCWs [25]. However, the study showed a close rate of satisfaction towards respecting confidentiality (73.8%). Hussain et al. (2021), in similarity to the current work, found that the satisfaction rate as getting happy after having the child vaccinated was 73.6% [28].

In the present study, the least satisfaction rates were noted in the Said Health Care Center while the highest portion of clients in Elragdia Health Care Unit and MahaletRouh Health Care Unit satisfied. The low level of satisfaction in this center could be attributed to its urban location which undergo the impact of certain sociodemographic factors as with higher social levels the expectations increase so the satisfaction levels decrease. In addition, being a large crowded center might affect the quality of services [5].

In this study, the highest percentage of satisfaction was observed in clients aged from 40 to less than 60 years, clients of rural residence, married clients, clients having secondary education, employers, persons with enough income, persons those having female child, clients having children aged from 20 to 30 months were satisfied (88.9%).

The high satisfaction levels in the middle aged persons (40-60 years) could be due to better realization of the situation and no overestimations of the service drawbacks as occurs in young age. In agreement with our findings, the study of Noel &Omozuwa (2021) reported that the highest percentage of satisfaction was found in clients aged 40-50 years [29].

Rural residents' higher satisfaction rates could be explained by the better quality of services presented by rural units, being little crowded and easily reached. Also rural residents have more simple expectations and they are not surrounded by the stressful conditions that encountering the urban residents. Similar findings were presented by Fatiregun&Ossaidone (2014) who suggested that being a client in a rural area increases the probability of being satisfied with immunization services [5].

Persons enough income delivers a state of general satisfaction and decrease the surrounding stress. This may be the cause of higher satisfaction in clients with enough outcome. In alignment with this finding, the study of Dana et al (2020) found that the highest satisfaction rate was found in clients with enough outcome [19].

The clients with older child age showed association with better satisfaction could be related to overall better health conditions in the older children and they are less vulnerable than the younger age. Also, they had previous experience of vaccination and had familiarity with the immunization units' services and system. All these factors adjust the expectation levels and limit the overestimation of simple faults of the system. Likewise, Noel &Omozuwa (2021) reported that the highest percentage of satisfaction was found in clients with children aged 6-23 months [29].

The higher satisfaction in married clients could be a result of the support from their spouses and family stability. The little satisfaction in divorced and widowed clients is congruent with the study of Fatiregun&Ossaidone (2014), this is likely due to that single parent is less socially supported [5].

The effect of education level on satisfaction was previously described. Our findings are consistent with the studies of Nabbuye-Sekandi et al (2011) [30]. OL et al (2014) [31], and Dana et al (2022) [19], who reported that the highest satisfaction rates were found in clients with secondary education. These are likely capable of following the instructions compared with those with less levels of education, therefore they have higher satisfaction levels. However, clients with education higher than secondary tended to show less satisfaction scores. This is explained by the high expectations of good service.

In the current work, clients' knowledge was determined as one of the principal drivers of satisfaction. Similar findings were previously reported [15, 19, 32].Animaw et al (2014) reported that knowledge about vaccines availability and schedule were important predictors of caregivers' satisfaction concerning their children vaccination [33].

The main barriers for childhood vaccination in the current study were the distance between the PHC center and house, the means of transport availability, and the non-efficiency of the HCWs. Our findings go consistent with the study of Smith et al (2017) that reported practical barriers such as inconvenient clinic locations as reasons against vaccination [34]. The distance between the vaccination center and clients' home was reported by Debela et al (2022) [18], and Fatiregun&Ossaidone (2014) [5], to be a factor affecting the completion of immunization program. Close proximity of the Health Care Centers may also support the immunization program, thus enhancing the satisfaction of clients with services.

In harmony with our study, the study of Maayan-Metzger et al (2005) reported that mothers did not comply with vaccination program due to the believe HCWs give vaccination without differentiation [35]. The same finding was found by Wolff &Madlon-Kay (2014) [36].An association between vaccine utilization and trust in the HCWs was found, as better relationship between clients and the healthcare provider resulted in better attitude towards vaccination [34].

Some of these obstacles may be the result of general public utility decline, staff workload pressures brought on by a lack of skilled HCWs, and clinic overcrowding caused by insufficient waiting areas. The right of patients to information, their dignity, and quality care, including time to discuss their concerns with the HCWs, must be understood by medical staff. These have been discovered to have an impact on client satisfaction, subsequent usage of those services, and even the recommendation of such services to other potential customers [25].

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5. CONCLUSION

In the present study the least satisfaction rates were noted in the Said Health Care Center while the highest portion of clients in Elragdia Health Care Unit and Mahlarouh health unit satisfied. The highest percentage of satisfaction was observed in clients aged from 40 to less than 60 years, clients of rural residence, married clients, clients having secondary education,

employers, persons with enough income, persons those having female child, clients having children aged from 20 to 30 months were satisfied (88.9%). The main barriers for childhood vaccination in the current study were the distance between the PHC center and house, the means of transport availability, and the non-efficiency of the HCWs.

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CONSENT (WHEREEVER APPLICABLE)

Not applicable.

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ETHICAL APPROVAL (WHEREEVER APPLICABLE)

The study was commenced after approval by the Institutional Review Board. Approval was obtained by the study participants.

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Comment [K14]: Approval or consent

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