

Table 1. Socio-Demographic Characteristics of Study Participants (Parents) (N=298).

Particulars/Variables	Response	Frequency (N)	Percent (%)
Who is the parent taking care of the Child	Father	14	4.7
	Mother	284	95.3
If Caretaker, please indicate the sex	Female	284	95.3
	Male	14	4.7
How old are you	> 46 years	1	0.3
	18-25 years	99	33.2
	26-36 years	161	54.0
	37-45 years	37	12.4
What is your current marital Status	Divorced	8	2.7
	Married	257	86.2
	Separated	6	2.0
	Unmarried	25	8.4
	Widowed	2	0.7
How many children do you have	More than Three	90	30.2
	One	90	30.2
	Two - Three	118	39.6
Have you ever attended School	No	60	20.1
	Yes	238	79.9
What is the highest level of Education you completed	Didn't complete primary	11	4.6
	Madrassa	44	18.5
	Primary	31	13.0
	Secondary	107	45.0
	Tertiary	45	18.9
What is your occupation	Businessman/Woman	61	20.5
	Civil Servant	43	14.4
	Driver/ carpenter/Mechanic	2	0.7
	Farmer	1	0.3
	Housewife	166	55.7
	No response	2	0.7
	Others	8	2.7
	Student	15	5.0
What is your religion	Christianity	11	3.7
	Islam	287	96.3
To which ethnic group do you belong	Creole	1	0.3
	Fula	65	21.8
	Jola	31	10.4
	Mandinka	99	33.2
	Manjago	12	4.0
	Others	9	3.0
	Sarahulay	29	9.7
	Serere	6	2.0
Wollof	46	15.4	

Table 2. Parents’ knowledge about Childhood immunization (N=298).

Knowledge/Variable	Response	Frequency (N)	Percent (%)
Have ever heard of immunization	No	8	2.7
	Yes	290	97.3
Where did you get your source of information	Community Health Worker	6	2.0
	Family member	81	27.2
	Friend	23	7.7
	Health Worker	160	53.7
	Radio	7	2.3
	TV	13	4.4
Have you ever immunized your child	No	5	1.7
	Yes	293	98.3
Do you know the Immunization diseases	No	59	19.8
	Yes	239	80.2
Name the list of the vaccines offered to your child	Name at least 1 Vaccine	18	7.5
	Name 2 to 3 Vaccines	41	17.2
	Name 4 to 5 Vaccines	63	26.4
	Name 6 to 7 Vaccines	41	17.2
	Name more than 7 Vaccines	76	31.8
Do you think your child's sickness is related to lack or inadequate immunization	Don't Know	69	23.2
	No	118	39.6
	No response	8	2.7
	Yes	103	34.6
When should a child get the first vaccine	At 6 months	2	0.7
	At 6 weeks	16	5.4
	At Birth	261	87.6
	Don't know	18	6.0
	No response	1	0.3
Does routine immunization prevent children from some infectious disease and its complication	Don't know	24	8.1
	No	16	5.4
	Yes	258	86.6
Do you know that most disease against which children are vaccinated occur during the first year of child life	Don't know	65	21.8
	No	84	28.2
	No response	5	1.7
	Yes	144	48.3
Do you know that multi doses of the same vaccine given at interval are important for the child immunity	Don't know	59	19.8
	No	46	15.4
	No response	8	2.7
	Yes	185	62.1
More than one vaccine at the same time have no negative impact on child's immunity	Don't know	93	31.2
	No	53	17.8
	No response	10	3.4
	Yes	142	47.7
Is it important to vaccinate children during immunization campaigns	Don't know	20	6.7
	No	4	1.3
	No response	2	0.7
	Yes	272	91.3
Do you know the next vaccination date is for your child	Don't Know	8	2.7
	No	46	15.4
	No response	3	1.0
	Yes	241	80.9
Is vaccination harmful	Don't Know	14	4.7
	No	243	81.5
	No Response	5	1.7
	Yes	36	12.1

Contrary to the issue that child immunization is associated with side effects 229 (76.8%) of parents agreed and 42 (14.1%) were neutral in their response. Most of the parents interviewed, a total of

268 (90.0%) agreed that immunization keeps a child healthy while 205 (68.8%) disagreed that local herbs are better than modern medicine. Surprisingly when parents were asked if it is safe to

immunize a child once, 164 (55.0%) of parents disagreed which may be that the question was not well formulated or probably taught that a child should be immunized more than once.

The majority of the parents 263 (88.2%) agreed that compliance with the immunization schedule is important as collaborated with the response for the importance of completing of the immunization schedule. Among the parents interviewed, the majority of the parents 258 (86.5%) agreed that vaccines strengthen the immune system of the child while a surprising response from the parents revealed that most of the parents 114 (38.3%) were neutral and 102 (34.3%) indicate agreement. Parents were asked if they have recommended vaccines to others, and the parents' response was

virtually not much of a difference between those who said 'Yes' and 'No'. A total of 144 (48.3%) parents said they will recommend vaccines to others while 119 (39.9%) parents said they will not recommend vaccines to others.

Regarding if parents demonstrated a positive attitude towards immunization, 260 (87.2%) of parents have a positive attitude and 13 (4.4%) had a negative attitude. With regards to satisfaction with the vaccination program offered by the Ministry of Health 263 (88.3%) parents were satisfied while 16 (5.4%) were not satisfied. In terms of being satisfied with the health worker giving vaccines to their children 264 (88.6%) of the parents were satisfied and 20 (6.7%) were not satisfied (Table 3).

Table 3. Parents' Attitude about Childhood immunization (N=298).

Attitudinal Variables	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Child immunization is prohibited by religion	(5) 1.7%	(13) 4.4%	(21) 7.0%	(132) 44.3%	(127) 42.6%
Is it ideal to immunize a sick child	(29) 9.7%	(112) 37.6%	(75) 25.2%	(61) 20.5%	(21) 7.0%
Child immunization is prohibited by Culture	(10) 3.4%	(19) 6.4%	(31) 10.4%	(138) 46.3%	(100) 33.6%
It is ideal to always visit a health center whenever a child fall sick	(147) 49.3%	(124) 41.6%	(11) 3.7%	(7) 2.3%	(9) 3.0%
All Vaccines are safe	(84) 28.2%	(152) 51.0%	(40) 13.4%	(10) 3.4%	(12) 4.0%
Completion of the immunization schedule is important	(109) 36.6%	(165) 55.4%	(13) 4.4%	(5) 1.7%	(6) 2.0%
A child can become infected after vaccination with the disease(s) against which the child was vaccinated	(15) 5.0%	(93) 31.2%	(85) 28.5%	(76) 25.5%	(29) 9.7%
Child immunization is associated with side effects	(34) 11.4%	(195) 65.4%	(42) 14.1%	(23) 7.7%	(4) 1.3%
Immunization keeps a child healthy	(95) 31.9%	(173) 58.1%	(20) 6.7%	(8) 2.7%	(2) 0.7%
Local herbs are better than modern medicine	(16) 5.4%	(32) 10.7%	(45) 15.1%	(127) 42.6%	(78) 26.2%
Is it safe to immunize a child once	(17) 5.7%	(51) 17.1%	(66) 22.1%	(107) 35.9%	(57) 19.1%
Do you think	(108) 36.2%	(155) 52.0%	(25) 8.4%	(4) 1.3%	(6) 2.0%

compliance with the immunization schedule is important					
Vaccines strengthen the immune system of the child	(94) 31.5%	(164) 55.0%	(22) 7.4%	(9) 3.0%	(9) 3.0%
Do you think more than one vaccine at the same time have no impact on child immunity	(19) 6.4%	(83) 27.9%	(114) 38.3%	(66) 22.1%	(16) 5.4%

	No response	Don't Know	No	Yes
Have you recommended vaccines to others	(18) 6.0%	(17) 5.7%	(119) 39.9%	(144) 48.3%
Do you have a positive attitude towards immunization	(14) 4.7%	(11) 3.7%	(13) 4.4%	(260) 87.2%
Are you satisfied with the vaccination program offered by the Ministry of Health	(8) 2.7%	(11) 3.7%	(16) 5.4%	(263) 88.3%
Are you satisfied with the health Workers giving vaccines to your child	(7) 2.3%	(7) 2.3%	(20) 6.7%	(264) 88.6%

Perceptions of Parents regarding childhood immunization

Since parents are the primary caregivers and decision makers for children, adherence and acceptance of vaccination is dependent on the parent’s knowledge, perception, and attitude towards childhood vaccination. It is documented that one of the major determinants towards any vaccine acceptance and hesitancy is the perception of parents towards the vaccine [14]. Based on the perception/Beliefs of parents 264 (88.6%) of parents perceived satisfaction towards the immunization program offered within the Kanifing Municipality.

Parents interviewed 101 (33.9%) responses were neutral in terms of whether a child suffering from diarrhea could be vaccinated while 154 (51.7%) of the parents believed that children with diarrhea could still be vaccinated. Similarly, 147 (49.3%) believed too that a child suffering from fever could also be vaccinated; likewise, children suffering from common cold whereas 191 (64.1%) agreed positively for those children to be vaccinated. However, 72 (24.2%) were neutral in their responses to whether a child with a common cold could be vaccinated or not.

Parents interviewed were asked if the side effects of vaccines are dangerous, 150 (50.4%) of parents disagreed while 104 (34.4%) agreed that side effects of vaccines are dangerous which eventually should provide room to focus on IEC to ensure parents’ perception on vaccine safety is assured at all times. Regarding vaccine safety, parents 269 (90.3%) perceived that vaccines are safe and 274 (92.0%) perceived that immunization is beneficial to their children.

Parents interviewed were asked if immunization can cause infertility on life, the majority of parents 231 (77.5%) perceived otherwise and disagreed that immunization could cause infertility in life. Parents were further asked to provide their opinions about the vaccination program and 138 (46.3%) perceived that vaccination protects disease(s); 149 (50.0%) of parents said is good for the child while 7 (2.3%) of the parents believed that it controls birth (act as a family planning method).

When parents were asked, what they think could be the reasons why children could not complete their immunization, 69.9% of parents mentioned mother was too busy; 36.8% mentioned fear of side effects; 24.7% mentioned the time of immunization was not convenient; 10.8% mentioned vaccine was not available; 14.9% mentioned they had no belief in the immunization program; 25.3% mentioned they were not aware of the need for immunization;

10.1% mentioned that they had no information about the need for 2nd or 3rd dose; 7.8% mentioned that they saw no risk of infection; and 12.5% mentioned that they had no information about the routine vaccination schedule (**Table 4**).

Table 4. Parents’ Perception Beliefs about Childhood immunization (N=298).

Perception Beliefs Variables	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Are you satisfied towards the immunization program	(93) 31.2%	(171) 57.4%	(16) 5.4%	(11) 3.7%	(7) 2.3%
Can a child with Diarrhea be vaccinated	(26) 8.7%	(128) 43.0%	(101) 33.9%	(37) 12.4%	(6) 2.0%
Can a child with Fever be vaccinated	(25) 8.4%	(122) 40.9%	(62) 20.8%	(73) 24.5%	(16) 5.4%
Can a child with common cold be vaccinated	(65) 21.8%	(126) 42.3%	(72) 24.2%	(28) 9.4%	(7) 2.3%
Are side effects of vaccines dangerous	(16) 5.4%	(86) 28.9%	(46) 15.4%	(126) 42.3%	(24) 8.1%
Do you think immunization can cause infertility in life	(8) 2.7%	(28) 9.4%	(31) 10.4%	(119) 39.9%	(112) 37.6%
Do you think childhood vaccination are safe	(97) 32.6%	(172) 57.7%	(19) 6.4%	(7) 2.3%	(3) 1.0%
Do you think immunization is beneficial	(112) 37.6%	(162) 54.4%	(15) 5.0%	(6) 2.0%	(3) 1.0%

Perception Beliefs/Variable	Response	Frequency (N)	Percent (%)
What is your opinion about vaccination	It controls birth	7	2.3
	Report negative reaction	4	1.3
	Vaccine is good for the child	149	50.0
	Vaccines protect disease(s)	138	46.3
What do you think are the reason(s) why children don't complete their immunization	Mother too busy	207	69.9
	There is no risk of infections	23	7.8
	Vaccines not available	32	10.8
	Time for immunization not convenient	73	24.7
	No information about the need for second or third dose	30	10.1
	No belief in immunization	44	14.9
	Fear of side effects	109	36.8
	No information about routine vaccination schedule	37	12.5
What do you think are the reason(s) why children don't complete their immunization	Not aware of the need for immunization	75	25.3
	No response	5	1.7

Practice of Parents regarding childhood immunization

In this study, 298 (100.0%) parents reported having ever taken their children for immunization. Regarding the number of times a child should be immunized 235 (78.9%) of parents reported four times and above while 39 (13.1%) reported twice or three times and 24 (8.1%) parents reported once. At what age should a child start immunization, 274 (91.9%) reported at birth while 13 (4.4%) parents reported at 6 weeks. The study also revealed that amongst the 298 parents, 213 (71.5%) usually take their children for immunization at the health center while 84 (28.2%) usually take their children to hospitals or private clinics.

On the issue of the number of times, parents visit the health facility, 133 (44.6%) parents visited the health facility four-five times and above, whereas 29 (9.7%) visited two-three times, and 136 (45.6%) parents visited the health facility once. Regarding the traveling time to the health facility, 103 (34.6%) of parents on average took 15-29 min, 87 (29.2%) took less than 15 min; 26 (8.7%) took more than 60 min and 82 (27.5%) took 30-60 min of travel time to the health facility respectively.

On the means of transportation to the health facility, 120 (40.3%) of the parents boarded taxis to travel to the health facility while 143 (48.0%) usually traveled by footing and 33 (11.1%) used private cars to travel to the health facility. A child welfare card is an important document that serves as a reference point for a child's

health history and retaining the child welfare card is a good practice. Two hundred and eighty-five (95.6%) of parents have in their possession the child welfare card and 11 (3.7%) were not in possession of their children's welfare card. The study further revealed that 237 (79.5%) reported being happy when their children received vaccination while 55 (18.5%) reported not being happy.

Regarding whether the health facility team does greet parents who turn up to have their children vaccinated, 265 (88.9%) reported that they are greeted by the health facility staff. The need to be informed to make informed decisions and/or choices is paramount and thus when parents were asked if they were given information about the current vaccines, 198 (66.4%) responded positively while 88 (29.5%) responded negatively. Similarly, 181 (60.7%) parents responded positively and 98 (32.9%) responded negatively respectively when asked whether health workers do inform them of the types of vaccine(s) their children were being vaccinated with.

On the dose of the vaccines that the children of the parents took, 120 (40.3%) responded positively that the health worker informed them while 145 (48.7%) responded negatively that the health workers did not inform them of the dose of the vaccine(s) their children were administered and whether parents were informed of the next appointment schedule, 261 (87.6%) responded positively of been informed. Time spent waiting to receive a service(s)

contributed to a large extent if individuals are motivated to wait or not. When parents were asked how long they usually wait before receiving services, the majority of the parents 138 (46.3%) responded 15-29 min; 84 (28.2%) responded less than 15 min, and 43 (14.4%) responded 30-60 min.

In addition, to the waiting time before services were received, most of the parents 103 (34.6%) spent less than 5 min and almost the same number of parents 102 (34.2%) spent more than 10 min. Out

of the 298 parents who have ever taken their children for immunization, 208 (69.8%) reported that their children never developed problems after vaccination while 79 (26.5%) reported that their children developed problems after vaccination. Regarding whether someone had ever discouraged parents from vaccinating their children, the majority of the parents 257 (86.2%) responded negatively while friends 28 (9.4%) discouraged parents; 9 (3.0%) husbands were found to discourage parents and 1 (0.3%) were found to be religious leaders (**Table 5**).

Table 5. Parents’ Practices about Childhood immunization (N=298).

Practices/Variable	Response	Frequency (N)	Percent (%)
Have you ever immunized your child	Yes	298	100.0
	Four times and above	235	78.9
How many times should a child be immunized	Once	24	8.1
	Three times	24	8.1
	Twice	15	5.0
	At 6 months	3	1.0
At what age do your children start immunization	At 6 weeks	13	4.4
	At Birth	274	91.9
	Don't Know	6	2.0
	No Response	2	0.7
	Community Outreach	1	0.3
From where do you usually take your children for immunization	Health Centre	213	71.5
	Hospital	57	19.1
	Private Clinic	27	9.1
	Four - Five times and above	133	44.6
How many times do you visit the health facility	Once	136	45.6
	Two - Three times	29	9.7
	<15 min	87	29.2
What was the travelling time to the health facility	>60 min	26	8.7
	15 - 29 min	103	34.6
	30 - 60 min	82	27.5
	Motorcycle	2	0.7
What was the means of transport to the health facility	On foot	143	48.0
	Private Vehicle	33	11.1
	Taxi	120	40.3
	Don't Know	2	0.7
Do you have any card where the child/children's immunization is recorded	No	11	3.7
	Yes	285	95.6
	Don't Know	6	2.0
Are you happy when your child is vaccinated	No	55	18.5
	Yes	237	79.5
	No	33	11.1
Did the health team greet you	Yes	265	88.9
	Don't Know	4	1.3
Are you given the information about the current vaccine	No	88	29.5
	No Response	8	2.7
	Yes	198	66.4
	Don't Know	6	2.0
Did the health worker tell you the types of vaccine(s) your child was taking	No	98	32.9
	No Response	13	4.4
	Yes	181	60.7
	How long have you been waiting before receiving services	<15 min	84
> 60 min		33	11.1

	15-29 min	138	46.3
	30-60 min	43	14.4
How long did you spend before your child was vaccinated	<5 min	103	34.6
	>10 min	102	34.2
	5-10 min	1	0.3
	5-10 min	92	30.9
	Don't Know	19	6.4
Did the health worker tell you the dose of the vaccine(s) your child took	No	145	48.7
	No response	14	4.7
	Yes	120	40.3
	Don't Know	3	1.0
Did the health worker tell you the next immunization appointment	No	25	8.4
	No response	9	3.0
	Yes	261	87.6
	Don't Know	7	2.3
Did your child develop a problem after vaccination	No	208	69.8
	No Response	4	1.3
	Yes	79	26.5
	Don't Know	7	2.3
Did someone ever discourage you from vaccinating your child	Father	2	0.7
	Friends	28	9.4
	Husband	9	3.0
	Mother	1	0.3
	No	257	86.2
	Religious Leaders	1	0.3

DISCUSSIONS

Socio-Demographic Characteristics of Respondents

The respondents or study participants in the study were parents of children 12 – 23 months old. A total of two hundred and ninety-eight (298) parents responded to the survey which accounts for 99% response rate. It is expected that in The Gambia, women/mothers are the primary caregivers/caretakers of their children, however, this study reveals that 14 (4.7%) of the parents were men/fathers. The majority of the parents were between the ages of 26 – 36 years old (54.0%) followed by those between 18-23 years old (33.2%). The majority of the parents were married (86.2%) followed by 13.8% who were either divorced, Separated, unmarried, or widowed.

This is evident in the findings of the Gambia Demographic Health Survey, which states that about 66% of women and 38% of men were married [15]. It is evident that the majority of the parents being married should have a good knowledge on immunization and its effects on their children. Majority of the parents (79.9%) who have at least attended formal education, 107 (45.0%) had secondary education, followed by 18.9% who had tertiary education, then 18.5% who had madrasa education, and 4.6% who did not complete primary education. Data from the GDHS 2013 revealed that in the Kanifing Municipality, women with secondary education account for 33.0% and 10.3% for more than secondary education [15].

These results and the findings of the study are almost consistent in their findings and demonstrate that among the parents, the literacy level was not high which may have an influence on parents'

knowledge attitude, and practice towards immunization. The majority of the parents interviewed (559%) were housewives, 20.5% were businessmen or women and 14.4% were civil servants. Civil Servants and businessmen and women account for 34.9% and since these professions boost the economy of individual and family status, it may also likely hamper the utilization of immunization services because those parents may not have the time to take their children for immunization services.

This study further revealed that 96.3% were Muslims and 3.7% were Christians and this was consistent with the Gambia Demographic Health Survey 2013 that mentioned that the Gambia is predominantly and the majority of the respondents/parents in the survey account for 96.0% who were Muslims [15]. Among the parents, 33.2% were Mandinka, while Fula account for 21.8% followed by Jola 10.4%, and 9.7% Sarahulay. This result is consistent with the survey conducted in 2013 where the Mandinkas account for 34%, followed by Fulas [15].

Knowledge of among parents regarding childhood immunization

A total of two hundred and ninety-eight (298) parents were enrolled in this study with a response rate of 99%. Parental knowledge regarding immunization constitutes an important decisive factor in ensuring the immunization status of their children. In this study, a total of 290 (97.3%) of the parents had ever heard about immunization and 160 (53.7%) said their source of information of hearing about immunization was from health workers, which indicates their likelihood of completing the immunization schedule of their children (Mabrrouke 2011).

In this study conducted, it has been reported that lack of parental knowledge about vaccines was an issue that led to low vaccination coverage, and mothers who had good knowledge about immunization and its importance were perceived to have greater immunization rates compared to those mothers who did not [16]. Similarly, in the same study, parents who get their children vaccinated on time seem to have higher vaccine-related knowledge and the negative attitude of parents was due to the lack of knowledge and vaccine importance [16].

In the present study, however, it was observed that 239 (80.2%) of parents had good knowledge about Vaccine-Preventable Diseases (VPDs), of which 76 (31.8%) were able to name more than 7 of the vaccines being offered by the Gambia Expanded Program on Immunization, 26.4% were able to name at least 4 to 5 of the vaccines, in addition, 48.3% said that they were aware that most diseases against which children are vaccinated occur during the first year of the child's life and that 62.1% of the parents acknowledge the fact that the multi-dose of the same vaccine that is given at intervals is important for the child's immunity.

The implication of this outcome is that immunization would be done out of the scheduled time or may be missed completely and this could be a predisposing factor for children to immunizable disease leading to sporadic or spontaneous outbreaks. Several studies have reported that limited knowledge of childhood immunization leads to incomplete vaccination and impacts immunization coverage [17,18]. A study reported that in children who have incomplete vaccination schedules, their mother has more than two times more likely than their counterparts to have knowledge of immunization [19].

A study by Al-Iela QB [20] revealed more than 70% of children whose mothers were found to be with adequate knowledge completed immunization while more than 50% had partial immunization. This study further revealed that the majority of the parents, 243 (81.5%) echoed that vaccination is not harmful while 36 (12.1%) indicated that vaccination is harmful. A total of 142 (47.7%) were positive that more than one vaccine at the same time has no negative impact on a child's immunity while 146 (59.0%) revealed that it has a positive impact on a child's immunity or has no idea.

A study conducted by Nankabirwa, et al 2010, reported that a child is supposed to get the first vaccine immediately after delivery which is also in line with the Gambian Expanded Program on Immunization settings thus my study results reveal the same that 87.6% of the parents said their child gets the first vaccine at birth and regardless of the child's sickness 39.6% do not relate the lack of immunization to child's sickness, 34.6% relates it to inadequate immunization and 23.2% had no clue. Although 62.8% do not relate or had no clue if the child's sickness is related to inadequate immunization, 86.6% of the parents were very positive that routine immunization prevents children from some infectious diseases and complications.

Attitude of parents regarding childhood immunization

Parents are associated to be the primary healthcare decision-makers for their children thus their attitude towards immunization programs has a great impact on their children's completion of their immunization status/schedule. Given that majority of parents/respondents (97.3%) had ever heard about immunization in the Kanifing Municipality, this reflects a lot regarding the attitude of parents towards the Gambia Immunization program uptake where the majority (90%) agreed that immunization keeps a child healthy and this findings was consistent with the study conducted in Malaysia [21] that reiterated that more than 80% of mothers interviewed agreed that vaccination is important for a healthy child.; 47.3% agreed that it is ideal to immunize a sick child and 55.0% responded that it was not safe to immunize a child once.

However, regarding about the safety of the vaccines, the response rate of 79.2% agreed that the vaccines administered by the immunization program are safe and the findings of the study conducted in Jeddah [22] that reported that parent's attitude towards vaccination was positive among most of the mothers and reported that vaccination is beneficial and more than 80% felt the vaccines received are safe, while 76.8% associated side effects with child immunization. It is vital information that most of the parents 86.9% disagree with the notion that child immunization status is prohibited by religion and 79.9% by culture.

These findings emphasize the necessity of integrating religious and cultural leaders in the widespread vaccination of communities. Religion and culture have a pivotal role in our society and could be potential influential factors/decisions crucial for implementing health programs such as immunization. People's perceptions of the illness are significantly influenced by their lack of understanding and by incorrect religious beliefs. According to Nasir et al. (2014), these elements are extremely likely to be the root of misunderstandings and possible obstacles to behavior change [23].

The current study found no evidence that either culture or religion restricted parents from immunizing their children [23]. When a child becomes ill, the majority of parents/respondents agreed (90.6%) that the child should be taken to the health center for treatment. This behavior suggests that parents/respondents value their children's health and are committed to getting them the care they need, thus averting children from contracting immunizable diseases. while 68.8% disagree with the fact that local herbs are better than modern medicine. Regarding the completion of the immunization schedule, the majority of the parents/respondents 92.0% echoed that completion of the immunization schedule is important and 88.2% agreed that compliance with the immunization schedule is important for the child's health. This finding is similar to a study conducted in Arar, Northern Saudi Arabia which reported that the attitude of parents towards childhood vaccination has contributed to more than 70% of parents ensuring that their children received all the mandatory vaccines [22].

The majority of the parents/respondents 86.5% agreed that the vaccines strengthen the immune system of the children when posed if the child becomes infected after vaccination with the disease(s) against which the child was vaccinated, 36.5% agreed; 35.2%

disagreed and 28.5 were neutral in their responses. Similarly, when parents/respondents were asked if they think more than one vaccine at the same time has no impact on the child's immunity, 34.3% agreed; 27.5% disagreed and 38.3% were neutral which implies that maybe the parents do think that multiple vaccinations given at the same time to the child may harm the child.

Among the parents that had ever heard about immunization 97.3%, 48.3% of them responded that they have recommended vaccines to others which was far lower than the study conducted by Alruwaili [22] that reported that more than 90% of the parents had advised their relatives and friends to take their children for vaccination; 87.2% had a positive attitude towards immunization; 38.3% were satisfied with the vaccination program offered by the Ministry of Health and 38.6% were satisfied with the health workers attitude giving vaccines to their children [22]. The response on health care seeking was surprising.

Many respondents (42%) disagreed with the idea of always visiting a health center whenever a child falls sick. On the contrary, Bernsen [24] revealed that the majority of the fathers of immunizable children knew the reason for child immunization. The majority (86.6%) said that vaccination is necessary. They also had good health-seeking behavior where they reported any sickness their children had. Also, in our study, the majority of the caretakers (70%) believed that local herbs were better than modern medicine.

This was a wrong perception because herbal medicine is not scientifically proven to prevent immunizable diseases. It is crucial to highlight that respondents' attitudes on vaccine uptake in the current study were significantly impacted by their knowledge. Our findings indicate that education was a key factor in shaping positive views to promote vaccine uptake, as seen by the 80.5% of children who were fully vaccinated by the age of 2 years. Thus, it is advised to implement programs that support health education to enhance knowledge- and attitude-based vaccination practice.

Perceptions of parents regarding childhood immunization

Since parents are the primary caregivers and decision makers for children, adherence and acceptance of vaccination is dependent on the parent's knowledge, perception, and attitude towards childhood vaccination. It is documented that one of the major determinants towards any vaccine acceptance and hesitancy is the perception of parents towards the vaccine [14].

Based on the perception/Beliefs of parents 264 (88.6%) of parents perceived satisfaction towards the immunization program offered within the Kanifing Municipality. Parents interviewed 101 (33.9%) responses were neutral in terms of whether a child suffering from diarrhea could be vaccinated while 154 (51.7%) of the parents believed that children with diarrhea could still be vaccinated. Similarly, 147 (49.3%) believed too that a child suffering from fever could also be vaccinated; likewise, children suffering from common cold whereas 191 (64.1%) agreed positively for those children to be vaccinated.

However, 72 (24.2%) were neutral in their responses to whether a child with a common cold could be vaccinated or not. Parents interviewed were asked if the side effects of vaccines are dangerous, 150 (50.4%) of parents disagreed while 104 (34.4%) agreed that side effects of vaccines are dangerous which eventually should provide room to focus on IEC to ensure parents' perception on vaccine safety is assured at all times. Regarding vaccine safety, parents 269 (90.3%) perceived that vaccines are safe and 274 (92.0%) perceived that immunization is beneficial to their children.

Parents interviewed were asked if immunization can cause infertility on life, the majority of parents 231 (77.5%) perceived otherwise and disagreed that immunization could cause infertility in life. Parents were further asked to provide their opinions about the vaccination program and 138 (46.3%) perceived that vaccination protects disease(s); 149 (50.0%) of parents said is good for the child while 7 (2.3%) of the parents believed that it controls birth (act as a family planning method). When parents were asked, what they think could be the reasons why children could not complete their immunization, 69.9% of parents mentioned mother was too busy; 36.8% mentioned fear of side effects; 24.7% mentioned the time of immunization was not convenient; 10.8% mentioned vaccine was not available; 14.9% mentioned they had no belief in the immunization program; 25.3% mentioned they were not aware of the need for immunization; 10.1% mentioned that they had no information about the need for 2nd or 3rd dose; 7.8% mentioned that they saw no risk of infection; and 12.5% mentioned that they had no information about the routine vaccination schedule.

Since parents are the primary caregivers and decision makers for children, adherence and acceptance of vaccination is dependent on the parent's knowledge, perception and attitude towards childhood vaccination. It is documented that one of the major determinants towards any vaccine acceptance and hesitancy is the perception of parents towards the vaccine [14]. In this study of Shati [14] it has been reported that almost 40% of the parents believed that is not dangerous to children and people have beliefs and concerns regarding the COVID-19 vaccine with its underlining issue of safety with myths that the vaccine is associated with infertility [14].

In addition, it further revealed almost 13% of the parents agreed that the vaccine can affect the puberty and fertility of the children which was further collaborated by other studies such as Sallam [34] whose respondents also believed that vaccines can cause infertility [14]. This accretion may not have been true from all indications as the same study revealed that over 50% of the parents agreed that vaccines are generally considered to be safe. Again, over 50% of parents thought that vaccines are more dangerous for children than adults which another study reported that almost 60% of the parents reported vaccines protect children from COVID-19 and its implications [14].

A survey conducted in India [25] reported that factors such as newness vaccines, rapid development and unknown long-

term side effects influences parent's perception of vaccine safety and their intention to uptake vaccination for their children. Another assessment conducted in Saudi Arabia on knowledge and perception towards the importance of childhood immunization. Abdalla [26] reported that majority of parents perceived that vaccination is important for the child as to prevent them from infection while few parents with low income perceived has side effects and most think that fever after immunization is harmful [26].

It further revealed that people perceived that vaccination is another avenue to invite diseases, protect from seasonal infection [27]. A study in the United Arab Emirates [28] reported that parents perceived concerns was the co-administration of multiple vaccines at once and more than 50% of the respondents agreed that multiple vaccines should not be administered the same time. It was further collaborated by another study by Jaajik et al 2013, that indicated about 70% of parents maintained that 3 vaccine injections per visit was too much [28].

Practice of Parents regarding childhood immunization

In this study, 298 (100.0%) parents reported having ever taken their children for immunization. Regarding the number of times a child should be immunized 235 (78.9%) of parents reported four times and above while 39 (13.1%) reported twice or three times and 24 (8.1%) parents reported once. At what age should a child start immunization, 274 (91.9%) reported at birth while 13 (4.4%) parents reported at 6 weeks. The study also revealed that amongst the 298 parents, 213 (71.5%) usually take their children for immunization at the health center while 84 (28.2%) usually take their children to hospitals or private clinics. On the issue of the number of times, parents visit the health facility, 133 (44.6%) parents visited the health facility four-five times and above, whereas 29 (9.7%) visited two-three times, and 136 (45.6%) parents visited the health facility once.

Regarding the traveling time to the health facility, 103 (34.6%) of parents on average took 15-29 min, 87 (29.2%) took less than 15 min; 26 (8.7%) took more than 60 min and 82 (27.5%) took 30-60 min of travel time to the health facility respectively. On the means of transportation to the health facility, 120 (40.3%) of the parents boarded taxis to travel to the health facility while 143 (48.0%) usually traveled by footing and 33 (11.1%) used private cars to travel to the health facility. A child welfare card is an important document that serves as a reference point for a child's health history and retaining the child welfare card is a good practice. Two hundred and eighty-five (95.6%) of parents have in their possession the child welfare card and 11 (3.7%) were not in possession of their children's welfare card.

The study further revealed that 237 (79.5%) reported being happy when their children received vaccination while 55 (18.5%) reported not being happy. Regarding whether the health facility team does greet parents who turn up to have their children vaccinated, 265 (88.9%) reported that they are greeted by the health facility staff. The need to be informed to make informed decisions and/or

choices is paramount and thus when parents were asked if they were given information about the current vaccines, 198 (66.4%) responded positively while 88 (29.5%) responded negatively. Similarly, 181 (60.7%) parents responded positively and 98 (32.9%) responded negatively respectively when asked whether health workers do inform them of the types of vaccine(s) their children were being vaccinated with.

On the dose of the vaccines that the children of the parents took, 120 (40.3%) responded positively that the health worker informed them while 145 (48.7%) responded negatively that the health workers did not inform them of the dose of the vaccine(s) their children were administered and whether parents were informed of the next appointment schedule, 261 (87.6%) responded positively of been informed. Time spent waiting to receive a service(s) contributed to a large extent if individuals are motivated to wait or not. When parents were asked how long they usually wait before receiving services, the majority of the parents 138 (46.3%) responded 15-29 min; 84 (28.2%) responded less than 15 min, and 43 (14.4%) responded 30-60 min.

In addition, to the waiting time before services were received, most of the parents 103 (34.6%) spent less than 5 min and almost the same number of parents 102 (34.2%) spent more than 10 min. Out of the 298 parents who have ever taken their children for immunization, 208 (69.8%) reported that their children never developed problems after vaccination while 79 (26.5%) reported that their children developed problems after vaccination. Regarding whether someone had ever discouraged parents from vaccinating their children, the majority of the parents 257 (86.2%) responded negatively while friends 28 (9.4%) discouraged parents; 9 (3.0%) husbands were found to discourage parents and 1 (0.3%) were found to be religious leaders.

A cross-sectional study conducted in Kinshasa, DRC [29] reported that factors relating to childhood vaccination differs by area and immunization coverage completeness based on child welfare immunization cards was low. The same study revealed that in 2001 survey that was conducted, slightly above 45% reported children fully immunization status as very low. In addition, the study reported that mother's knowledge and fathers' involvement are key factors to ensure complete immunization of their children [29]. Similarly, it showed that 75.7% of the children surveyed, the mothers were able to possess the immunization card of the child, which indicated that to have a better determining factor for monitoring immunization coverage the child immunization card should be available so as to transcribed all the immunization given to the child [29].

A study [30] that was conducted among mothers of under-fives in Vettathoor Panchoyath, India reported more than 80% had their children fully immunized. The same study revealed that although over 80% fully immunized were reported, those children not fully immunized had various reasons such as feared of AEFI, unwillingness of husband in vaccinating the child as well as religious reasons whilst some were not feeling confident or didn't trust the

immunization program [30]. The same study revealed as a practice that majority of the respondents mentioned that they will seek help of a health worker in case of AEFI while slightly above 70% preferred going to government hospital for vaccination [30,31].

The study conducted bin Kinshasa [29] reported that among children 0-4 years, more than 80% were fully immunized based on the reports provided by the mothers of those children. In addition, more than 75% had mothers keeping/providing/in possession of the child immunization welfare card. Similarly, in the same study mothers reported that father's involvement is very important in ensuring the child vaccination status is attained [29]. In another study conducted in India [32] reported that the practice of mothers towards vaccination is optimum as more than 90% have completed childhood vaccination for their children in accordance with the immunization schedule of the immunization programme.

The same study observed that mothers' practice was highly satisfactory which was observed in a similar study conducted by Shamila Hamid et al and many other studies [32-35]. A study further revealed that parents who wait a shorter time to received immunization services were more three folds more likely to practice childhood immunization than parents who wait a long time to receive the immunization services [36].

CONCLUSION

In the Kanifing Municipality settlements of The Gambia, the study looked at parents' knowledge, attitudes, perceptions /beliefs and practices regarding vaccination/immunization uptake. Regarding knowledge of vaccination uptake, all respondents had heard of and correctly defined vaccination. About more than half (53,7%) received information from health workers out of those who have ever heard of immunization and believed that immunization training/sensitization or awareness was required. They also knew that routine immunization protected children from some infectious diseases and their complications and increased a child's immunity, which helped fight diseases as well as when to administer the first vaccine but 31.8% of the parents were able to name more than 7 of The Gambia immunization programs offers.

Many of them were aware that multiple, spaced-out doses of the same vaccine are crucial to a child's immunity. However, there was insufficient awareness of the immunizable diseases, the appropriate number of times a child should be immunized. Additionally, 39.6% do not relate the lack of immunization to child's sickness which indicated that there was insufficient awareness of the immunizable diseases. This indicated a lack of vaccination knowledge. Regarding attitudes toward immunization uptake, parents are the primary healthcare decision-makers for their children, and their attitude toward immunization programs significantly

impacts their children's completion of their immunization status.

In the Kanifing Municipality, 93.3% of parents had heard about immunization, with 90% agreeing that it keeps a child healthy. Religion and culture play a pivotal role in society, and these factors can be influential factors in implementing health programs such as immunization. When a child becomes ill, the majority of parents agree that the child should be taken to the health center for treatment, indicating a commitment to providing the care their children need. However, 68.8% disagree with the idea that local herbs are better than modern medicine. The majority of parents who had ever heard about immunization recommended vaccinations to others, which was lower than the majority of parents who advised their relatives and friends to take their children for vaccination.

The response on health care seeking was surprising, with 42% disagreeing with the idea of always visiting a health center whenever a child falls sick. However, the majority of fathers of immunizable children knew the reason for child immunization, and they had good health-seeking behavior. The majority of caretakers (70%) believed that local herbs were better than modern medicine, which is not scientifically proven to prevent immunizable diseases. Education is a key factor in shaping positive views on vaccine uptake, as seen in the 80.5% of children who were fully vaccinated by the age of 2 years. Implementing programs that support health education can enhance knowledge- and attitude-based vaccination practice.

Parents are the primary caregivers and decision-makers for their children, and their knowledge, perception, and attitude towards childhood vaccination are crucial factors in adherence and acceptance. Some parents were neutral about whether a child with diarrhea could be vaccinated, and others believed that children with fever could also be vaccinated. The majority of parents (75.5%) disagreed with the side effects of vaccines, and they believed that vaccination protects diseases and controls birth. Some reasons why children could not complete their immunization included being too busy, fear of side effects, inconvenient timing, lack of information about the vaccination program, lack of belief in the immunization program, lack of awareness of the need for immunization, lack of information about the routine vaccination schedule, and lack of information about the routine vaccination schedule.

Factors such as newness, rapid development, and unknown long-term side effects also influence parents' perception of vaccine safety and their intention to uptake vaccination. This study analyzed the experiences of 298 parents who have taken their children for immunization. The majority of parents reported taking their children for immunization at birth, while the majority of parents visit the health facility at least four times. The majority of parents have a child welfare card, which serves as a reference point for a child's health

history. Parents are generally satisfied with the health facility staff's greeting and information about the current vaccines.

The study found that parents are more likely to be happy when their children receive vaccinations, while those who are not are less satisfied. Parents who are informed about the vaccines and the next appointment schedule are more likely to be satisfied. Waiting time before receiving services is also a significant factor in parents' motivation to wait. Mothers' practice towards vaccination is optimum, with over 90% of them completing childhood vaccinations according to the immunization schedule. Parents who wait a shorter time to receive immunization services are three times more likely to practice childhood immunization than those who wait a long time.

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