



PERSUASIVE COMMUNICATION: THE ROLE OF SENDER CHARACTERISTICS IN PERSUASIVE COMMUNICATION ON ADOPTION OF ROUTINE IMMUNIZATION SERVICES

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ABSTRACT

Introduction: An estimated two to three million annual deaths from Vaccine preventable diseases are preventable through immunization. Currently, about 19.5 million infants miss out on routine immunization globally. The study examined the role of sender characteristics in persuasive communication on adoption of routine immunization of children aged 0-5 years in Bomet County – Kenya. **Materials And Methods:** This study self-funded, was a cross-sectional hospital based, employing a mixed method research design. A sample of 384 caregivers participated. Cronbach's alpha and confirmatory factor analysis tests were conducted to ascertain reliability and validity of study instruments. Data was collected using interviewer administered questionnaires and KII guide. Chi-square test was done to establish the relationship between sender characteristics and adoption of routine immunization. **Results:** The response rate was 95.1% with majority in the age bracket of 19-25 at 42.2% and 61.4% were married with 36.9% reporting to be housewives. Majority had primary level of education at 53.7%, with only 8.8% having attained tertiary and 1.9% had not attained any level of education. Health workers were reported to be the main source of information. However, a significant number (49.5%) said they were not responsive enough to the caregivers concerns and needs for information. The participants had low trust and could not identify with the source of routine immunization messages. A majority of participants could not articulate the messages. The adoption rate was found to be at 56.7% below the WHO recommended. 29.1% to 38.8% of adoption was explained by sender characteristics. **Conclusion:** Ho was rejected. The study recommended that routine immunization messages be made frequently available, targeted and tailored to the caregivers. Community should be involved in advocacy. Additionally, health workers should be motivated towards good practices in Healthworker-client communication specifically, persuasive communication.

KEYWORDS : Persuasive communication, immunization, adoption, sender

INTRODUCTION

A fully immunized child is an ambitious but practical indicator that should be used to measure health progress. According to UNICEF statistics, there has been a recognizable reduction of infant deaths caused by vaccine preventable diseases (VPDs) over the recent years. VPDs are life threatening and delay a country's development. A major strategy to reduce VPDs is by coming up with and reviewing communication plans with well-defined strategies that will ensure fully immunized child (FIC) in all settlements (UNICEF, 2016). In 2017, Kenya's national immunization coverage was 65% for fully immunized child. The top performing counties at coverages above 80% were Kiambu, Turkana and Nairobi. Three counties (6%) had coverage of approximately 50%. The worst performing counties were Trans Nzoia, Manderu (53%) and Tana River (55%) and Bomet 50% (WHO, 2018). Bomet was purposely selected for the study for this reason of being the lowest performing.

Bomet County fully immunized children were at 50%, against the national target of 90% and above (WHO, 2017). This low coverage was being witnessed inspite of the fact that the government of Kenya has put key focus on these life-threatening VPDs as other peer countries do. The report further stated that the reasons for this coverage was not attributed to vaccine or commodity stock outs as there had been none reported in the County. The coverage was attributed to knowledge gap and low literacy levels among the caregivers that hindered effective communication. This study therefore sought to determine persuasive communication factors influencing adoption of routine immunization of children aged 0-5 years in Bomet County. Specifically the study sought to establish the influence of caregiver characteristics on adoption of routine immunization of children aged 0-5 years in Bomet County. The study adopted

null hypothesis as stated below.

H_{0i}: There is no significant influence of sender characteristics on adoption of routine immunization of children aged 0-5 years in Bomet County

MATERIALS AND METHODS

This was a cross sectional study carried out in Bomet County. Bomet County, the primary sampling unit, was purposively selected being the poorly performing (at 50% fully immunized children coverage) in adoption of vaccination of children aged 0-5 years. The target population was caregivers (15-49 years) seeking care for children aged 0-5 years at the sub-county hospitals, estimated to be 1747 (Bomet County health records, 2018). The sampling frame was the day's outpatient/pediatrics clinic register in the five sub-county hospitals. Sample size was determined according to Fischer et al., (1991). Using the following formula;

$$n = \frac{Z^2 pq}{d^2}$$

Where:

Z = The standard deviate (1.96)

n = Desired sample size

p = Percentage of population with the desired characteristics

q = 1-p

d = Margin of error (0.05)

$$\text{Therefore: } n = \frac{(1.96)^2 (0.50) (0.50)}{(0.05)^2} = 384$$

The 384 study participants were allocated to the five Sub-counties proportionately, depending with the average number of children 0-5 years attended to in the Sub-county hospitals monthly, (table 1).

Table 1: Proportionate Sampling of Study Sample

Sub-County	Number seen	%	Participants	Sampling interval
Sotik	400	23	88	5
Bomet East	296	17	65	5
Bomet central	332	19	73	5
Konoin	332	19	73	5
Chepalungu	387	22	85	5
TOTAL	1,747	100	384	

A semi-structured interviewer administered questionnaire was administered to the caregivers seeking services for children age 0-5years at the Sub-County hospitals. In addition, the researcher conducted KI interviews with health workers. Validity was ensured by use of random heterogeneous samples whose findings were generalized. Further, Cronbach's Alpha test was used to measure reliability in this study.

Data Analysis And Presentation

In order to conduct the data analysis SPSS tool was used. The qualitative data was transcribed according to the identified themes and edited then analyzed qualitatively in the form of narratives.

Ethical Consideration

Ethical clearance was sought from Mount Kenya university Ethical board (MKU, 0360 Feb 2020). Upon the receipt of ethical clearance, NACOSTI study license was sought and granted License No: **NACOSTI/P/20/3696**.

RESULTS

Data was collected from all the five Sub-county hospitals of Bomet County. During data cleaning, only 365 questioners out of the 384 participants interviewed, had questioners properly completed and therefore, qualified for data analysis. This translated to 95.1% response rate (table 2).

Table 2: Response Rate

Response Rate	Frequency	Percent
Completed	384	100%
Fit for analysis	365	95.1%
Spoilt	19	4.9%
Total	384	100%

Socio Demographic Characteristics

To investigate age distribution of respondents, it was found out that, majority were in the age bracket of 19-25 at 42.2%. This was closely followed by age 26-30 at 21.9%. Age 14-18 indicated a percentage of 13.3%. Age 31-35 recorded a percentage of 11.0%, 36-40 then 41& above recorded 5.8% for each case. On the question of marital status, it was established that majority of the respondent are married and this was supported by 61.4%. This is in spite of the fact that a significant percentage of them being in the age bracket of 14-18 year (teenagers), forming 36.6 % of the population of single mothers.

Question on the number of children, 49.3% had between 4-6, followed by 35.0% having between 1-3 and 15.6% had above 6 children. 75.3% had one child below 5 years with a significant percentage (20%), having two children below 5 years. The study was also interested in establishing the level of education and occupation of the respondents. Majority of the respondent had primary level of education at 53.7 %, followed by secondary level those had attained only primary level of education with only 8.8% having attained tertiary level of education and lastly those who had no level of education were 1.9% (table 3).

Further, it was found that 36.9 % of the respondents reported to be housewives, 29.9 were farmers, with the 14.1 % being self-

employed and 10.1% were in formal employment (table 3). It was obvious that there was high levels of dependency, which may affect adoption of routine immunization. Concerning 57.3 % were Protestants, a significant number (37.3%) catholic, Muslims 5.5% and others taking up the remaining 6.8% (table 3).

Table 3: Demographic Information

Age in years	Frequency	Percent	Cumulative Percent
14-18	49	13.4	13.4
19-25	154	42.2	55.6
26-30	80	21.9	77.5
31-35	40	11.0	88.5
36-40	21	5.8	94.2
41& above	21	5.8	100
Total	365	100	
Marital status			
Single	141	38.6	38.6
Married	224	61.4	100.0
Total	365	100.0	
Occupation			
Housewife	135	36.9	36.9
Farmer	109	29.9	66.8
Self-employed	51	14.1	80.9
Employed	70	19.1	100
Total	365	100	
Level of education			
Never been to school	7	1.9	1.9
Primary education	196	53.7	55.6
Secondary education	130	35.6	91.2
Tertiary education	32	8.8	100
Total	365	100	
Religion of respondents			
Catholic	136	37.3	37.3
Protestant	184	50.4	87.7
Muslim	20	5.5	93.2
Others	25	6.8	100
Total	365	100	
Number of children			
1-3	128	35.1	35.1
4-6	180	49.3	84.4
Above 6	57	15.6	100
Total	365	100	

Sender factors influencing adoption of routine immunization of children age 0-5 years in Bomet County

Sender factors were examined by asking the caregivers questions that would measure the variable as outlined.

Question on whether the source of the message on routine immunization was trustworthy, 6.8% strongly disagreed, 36.9% disagreed, 24.3% were undecided, 18.0% agreed with 14.0% strongly agreed. This gave a mean of 2.95. When the participants were as if they were able to identify with the sender; 8.6% strongly disagreed, 42.3% disagreed, 23.9% were undecided and 21.6% agreeing. Only 3.6% strongly agreed with a mean of 2.69 (table 4).

The participants was asked whether the message sender was

able to articulate the message well; 6.8 of the participants strongly disagreed, majority (38.3%) disagreed with a significant percentage (32.0%) undecided, 14.0% agreed and a smaller percentage (9.0%) strongly agreeing that the sender was able to articulate the message well. The mean was 2.80. The question on whether the sender was willing to answer their questions regarding routine immunization; 14.4% strongly disagreed, 34.7% disagreed, 37.4% were undecided, 10.8% agreed and a smaller percentage (2.7%) strongly agreeing, giving a mean of 2.53 (table 4).

Table 4: Sender Factors

INDICATORS	SD	D	U	A	SA	Mean	STD. DEV
The source of the message was trustworthy	6.8%	36.9%	24.3%	18.0%	14.0%	2.95	1.176
I was able to identify with the sender	8.6%	42.3%	23.9%	21.6%	3.6%	2.69	1.018
The sender was able to articulate the message well	6.8%	38.3%	32.0%	14.0%	9.0%	2.80	1.058
The sender was willing to answer my questions in regard to routine immunization	14.4%	34.7%	37.4%	10.8%	2.7%	2.53	.959

Logistic Regression: Sender Characteristics And Adoption

The null hypothesis tested; there is no significant influence of sender characteristics on adoption of routine immunization of children aged 0-5 years in Bomet County. This was against the alternative. Logistic regression between sender characteristics and adoption of routine immunization was carried out (table 5&6).

Table 5: Classification For Sender Characteristics

	Observed		Predicted		Percentage Correct
			Adoption of routine immunization		
			No	Yes	
Step 1	Adoption of routine immunization	No	0	185	00.0
		Yes	0	190	100.0
Overall Percentage					51.3

α. The cut value is .500

Table 6: Variables In The Equation For Sender Characteristics

Step 0	Constant	B	S.E.	Wald	Df	Sig.	Exp(B)
		.053	.133	.159	1	.690	1.027

Values of two pseudo R2 (Cox & Snell R-Square and Nagelkerke R-Square) 0.291 to 0.388 were recorded on inclusion of sender characteristic in the model (table 7). Other outputs considered in the logistic regression analysis was correct classification rate. The classification rate had increased by 22.6% to 73.9% that is 73.9 – 51.3 = 22.6% (table 8).

Table 7: Model Summary For Sender Characteristics

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	235.499 ^a	.291	.388
2	231.796 ^a	.302	.403

α. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Table 8: Equation Table

Step 1 ^a	Sender characteristics	B	S.E.	Wald	Df	Sig.	Exp (B)
		1.198	.176	46.254	1	.000	3.312

	Constant	-7.384	1.089	45.991	1	.000	.001
α. Variable(s) entered on step 1: Sender characteristics							

Table 9: Omnibus Tests Of Model Coefficients For Sender Characteristics

Step 1	Step	Chi-square	Df	Sig.
	Step	77.644	1	.000
	Block	77.644	1	.000
	Model	77.644	1	.000

DISCUSSION

Demographic Characteristics

A significant number of the participants were teenagers. This study agrees with one carried out on routine immunization uptake that found maternal age is a factor influencing adoption of routine immunization (Kachikis, A et al., 2020). Although majority of the respondents were married, this study did not find any significant difference in attitude or adoption of routine immunization between the single and married caregivers. These findings differs with a study that found that female caregivers that were married had good attitude towards adoption of immunization services (Esohe O et al., 2016). Further, the study established that those participants with 1-3 children had the highest adoption rate compared to those with a higher number. The higher the number of children and specifically those with more below five years adopted less the routine immunization (P value of 0.004). This study agrees with one that found that those women with higher number of children tended to ignore taking children for vaccination (Hayles, E., et al., 2015 & Kaufman, J., et al., 2017).

Those participants with higher level of education had higher likelihood of adoption of routine immunization (P value of 0.001). This study is in agreement with a study that found that children of caregivers with lower maternal education were less likely to be fully vaccinated (Lisa M. et al., 2014 & Ouko J., 2014). Additionally, the study agrees with (Imoh, G., 2014). that found that education level determines immunization coverage. This study found that coverage was higher in areas where most caregivers generally had knowledge about VPDs symptoms. The occupation of a caregiver was not found to have any effect on adoption of routine immunization in this county. However, this study contradicts with studies that have documented that caregiver occupation may determine adoption of routine immunization. Studies such as one on routine immunization review in Nigeria (O'Connell, M., & Wonodi, C. 2015) found that caregivers who were employed were found to adopt routine immunization compared to their counterparts who were housewives.

Religion had an influence on adoption with those that were Catholics having lower adoption compared to the others in other denomination (p value 0.003). They were found to be the same group that had wrong information on side effects. Studies have found a relationship between routine immunization adoption and religion. Conspiracy theories linking vaccination and fertility control and/or sterilization have been propounded and promoted by religious leaders (Kaufman J. et al., 2017).

Sender characteristics influencing adoption of routine immunization of children age 0-5 years in Bomet County

The study found that the participants did not trust the source of the message and also they did not identify with the sender. This attribute of trustworthiness is very important in communication process. The study found that the main source of information of the routine immunization messages is health workers. The caregiver further said the health workers were not willing to answer their questions. Given these experiences, the health workers were not responsive enough to the caregivers concerns and needs for information. This tied with a study by O'Connell & Wonodi, (2015), that found that ill-treatment of caregivers by nurses becomes a strong barrier to

accessing vaccination services. The insults and intolerance of questions from health workers is an hindrance to adoption of routine immunization.

The participants reported that the sender of the routine immunization message were not able to articulate the message well and this led to the caregiver too not understanding the message well. They attributed this to use of language that was not clearly understandable to them. In the study area, there is high level of illiteracy, calling for construction of routine immunization messages that are simple and clear to target audience (the caregivers). The study agrees with one conducted by McNair (2014) that found that care givers who are not able to articulate the message well, had low adoption rate compared to those that were able to.

This variable was further tested by interviewing the KIs on health workers knowledge and their attitude towards adoption of immunization. They were reported to have good knowledge on vaccines and MOH recommended schedule. Additionally, they portrayed good attitude towards vaccination. There was evidence of scheduled immunization education sessions. A number reported challenge that the caregivers are impatient and they tend to come to the clinic late. For example one of the said;

'In this region, people keep dairy cows and calls for women, who are the main caregivers, have to start by taking care of their animals before taking their children to the clinic'.

This makes immunization not a priority, considering that the child is not sick.

Studies have found that community and social structures of an individual plays a big role in uptake of health services. According to Kaufman et al., (2017), vaccination communication concept includes many interventions with a number of aims. The purpose being: to inform or educate, remind or recall, enhance community ownership, teach skills, provide support, facilitate decision-making, and enable communication. This is not the case in Bomet County, due to low community involvement. Following this, community ownership of the immunization programme is portrayed to be weak and therefore not supportive to adoption of routine immunization. This tally with a study that found that insults by health workers is cause for vaccine dropout (UNICEF 2016).

All fifteen KIs interviewed agreed that the Sub-county offered immunization services and they had a targeted number of children for immunization. However, they agreed to not meeting the target. One of them said;

'It is surprising that despite not having challenges in vaccines stock out, we are not able to reach our target, we have a high immunization dropout rate. At times, we even come across children with zero doses'.

Logistic regression on sender characteristics and adoption of routine immunization was performed. Inclusion of independent variable (sender characteristic), confirmed that there was a significant relationship between the dependent variable (adoption of routine immunization) and independent variable (sender characteristics). This is explained using the results on omnibus tests of Model Coefficients for sender characteristics, displaying the outcome of the Likelihood Ratio (LR) tests. P-value was employed in making decision and by considering omnibus test was significant (p-values of 0.000).

The regression equation between sender characteristics and adoption of routine immunization of children aged 0-5 years in Bomet County. The optimal model is expressed as; $Y =$

$7.384 + 0.344X_0$, with p value corresponding to wald-statistics at 0.000. The finding shows that there was significant relationship between sender characteristics and Adoption of routine immunization.

Other studies have found that sender characteristics determine adoption of routine immunization. A sender should be able to communicate across bound with the caregiver and community leadership. Further studies confirm that community discussions and meeting with leaders, to address the concerns and opposition among religious groups have given good results in adoption of immunization services (WHO & UNICEF 2018). A study by WHO found that expertise in communication is a factor in adoption of routine immunization. Communicators with experience in design, delivery and evaluation of promotional communication can achieve positive attitude towards caregivers and improve vaccination uptake (WHO, 2016).

CONCLUSION AND RECOMMENDATIONS

The two pseudo R2 values shows that 29.1% to 38.8% of the variation in adoption of routine immunization was explained by sender characteristic. Hypothesis analysis was performed using wald-statistics and P-values, The following values were obtained; W-V .159 P- value .000. Therefore, the H_0 : There is no significant influence of sender characteristics on adoption of routine immunization in Bomet County, Kenya, was rejected.

Based on the study findings, the researcher gave the following recommendations;

1. Routine immunization specific messages, targeted and tailored to the caregivers, should be made available and provided frequently. The knowledge gap should be addressed by the sender making sure that messages are simple, clear and in a language that is easily understood by the caregivers
2. To achieve community support, community ownership should be cultivated by involving the opinion leaders such as religious leaders, local administration and community own resource persons. Involvement strategy should include use of the community members in routine immunization advocacy activities
3. The study having found that health workers are the main channels as well as senders of the routine immunization messages, the county health management should find means of motivating health workers towards achieving good Healthworker-caregiver communication tactic. This will help the caregivers to build trust and identify with the message sender to address the gap identified in the study.

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REFERENCES

1. Bomet County health records (2018). County intergrated development plan 2018-2022
2. Esohe Olivia Ogboghodo, Hendrith A. Esene, Obehi H. Okujie (2016)/ Determinants of adoption of Pentavalent in Benine City, Southern Nigeria. International Journal of community medicine and Public Health.
3. Hayles, E., Cooper, S., Wood, N., Skinner, S., & Sinn, J. (2015). Pertussis booster vaccination in pregnancy: Women who had it compared to those who waited. *Procedia in Vaccinology*, 9, 59-65. <https://doi.org/10.1016/j.prowac.2015.05.010>
4. Imoh, G. (2014). Communication Factors That Influence Mothers Decision To Complete Childhood Immunization In Rural Nigeria. *Global Journal of Arts Humanities and Social Sciences*, 2(7), 7-17.
5. Kachikis, A., Eckert, L. O., & Englund, J. A. (2020). The history of maternal immunization. *Maternal Immunization*, 3-24. <https://doi.org/10.1016/b978-0-12-814582-1.00001-2>

6. Kaufman, J., Ryan, R., Glenton, C., Lewin, S., Bosch-Capblanch, X., Cartier, Y., ... Hill, S. (2017). Childhood vaccination communication outcomes unpacked and organized in a taxonomy to facilitate core outcome establishment. *Journal of Clinical Epidemiology*, 84, 173–184. <http://doi.org/10.1016/j.jclinepi.2017.02.007>
7. Lisa M. Calhoun, Anna M. van Eijk, Kim A. Lindblade, Frank O. Odhiambo, Mark L. Wilson, Elizabeth Winterbauer, Laurence Slutsker and Mary J. Hamel (2014). Determinants and coverage of vaccination in children in western Kenya from a 2003 Cross-Sectional Survey. *The American Journal of Tropical Medicine and Hygiene*. 2014 Feb 5; 90(2):234241.
8. McNair McKenzie, C. (2014). Factors Influencing Vaccination Decisions in African American Caregivers of Preschool Age Children. University of South Florida, Scholar Commons, 85(May), NaN.
9. O'Connell, M., & Wonodi, C. (2015). Routine immunization consultants (RICON) review in Nigeria: A country driven management approach for health systems strengthening in routine immunization. *Annals of Global Health*, 81(1), 183. <https://doi.org/10.1016/j.aogh.2015.02.920>Rogozhina, I. (2018). undefined. <https://doi.org/10.5194/tc-2018-45-rc2>
10. Ouko Julia Awino (2014). Determinants of immunization coverage among children aged 12-23 months in kenya
11. UNICEF, (2016). Factors Influencing Vaccine Hesitancy and Immunization Coverage in Zimbabwe: Ministry of Health, ZIMBABWE, 1(2), 13–475. Wang, Z., & Zou, Z. (2018). Quantifying multicollinearity in ship manoeuvring modeling by variance inflation factor. Volume 7A: Ocean Engineering. <https://doi.org/10.1115/omae2018-77121>
12. WHO and UNICEF (2018). Estimates of immunization coverage: 2018 revision
13. WHO, (2018). Systematic literature review of the evidence for effective national immunisation schedule promotional communications. Insights into health communication (Vol. 23).
14. WHO,(2017). Immunization Coverage Fact Sheet. Available online: <http://www.who.int/mediacentre/factsheets/fs378/en/>
15. WHO, (2016). Systematic literature review of the evidence for effective national immunisation schedule promotional communications. Insights into health communication (Vol. 23).