

MESSAGE CONTENT IN PERSUASIVE COMMUNICATION AND ADOPTION OF ROUTINE IMMUNIZATION OF CHILDREN AGED 0-5 YEARS IN BOMET COUNTY

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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 content message 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 content message and adoption.

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. The results indicated that 56.12% had received message while 43.84% had not received any. On message attributes; clarity-50% disagreed, accuracy-41.9% disagreed, authenticity-57.2% disagreed, believability-79.8% disagreed, acceptability-22.1% disagreed with majority undecided and 50.4% said they could not understand the language used. The adoption rate was at 56.7%, this is below the WHO recommended.

Conclusion: The study findings concluded that between 11.2% to 14.9% of the variation in adoption of routine immunization of children aged 0-5 years in Bomet County was explained by content message. Therefore, H_0 was rejected. The study recommended that routine immunization messages be made frequently available, targeted and tailored to the caregivers. The community should be involved in advocacy. Additionally, health workers should be motivated towards good practices in Healthworker-client in persuasive communication.

Key words: Persuasive communication, immunization, adoption, content message

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, Mandera (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. This low coverage had been attributed to knowledge gap and low literacy levels among the caregivers, hindering 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 establish the influence of content message on adoption of routine immunization of children aged 0-5 years in Bomet County. The study adopted null hypothesis as stated below.

H₀₁: There is no significant influence of content message on adoption of routine immunization of children aged 0-5 years in Bomet County

Materials and Methods

This was a cross sectional study. The study was 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 service of children aged 0-5 years. The study target population was caregivers (15-49years) seeking care for children aged 0-5years 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-counties 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 on 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 could be 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-counties 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	

Content message factors influencing adoption of routine immunization

- **Availability, clarity and accuracy of the message**

To determine the influence of content message factor. The question on if they had received any message on routine immunization within the last three months. The results indicated that 56.12% had received content message on immunization while 43.84% had not received any message. On whether the message was clear; 27.0% strongly disagreed, 23.9% disagreed, 20.3% were undecided, with 18% agreeing and 10.8% strongly agreeing, giving a mean of 2.62 and standard deviation of 1.339. On whether the message was accurate, 9.0% strongly disagreed, 32.9% disagreed, while 39.6% were undecided, 13.5% agreed and only 5.0% of the participants strongly agreed that the message was accurate. The mean was 2.93, meaning that the participants did not find the message accurate (table 4).

- **Message clarity, authenticity, believability and acceptability**

On whether the message was clear; 27.0% strongly disagreed, 23.9% disagreed, 20.3% were undecided, with 18.0% agreeing and 10.8% strongly, giving a mean of 2.62 and standard deviation of 1.339. Message was authentic; 21.2 % strongly disagreed, 36.0% disagreed, 27.5% were undecided, with only 12.2% agreed and 3.2% strongly agreed that it was authentic. The mean was 2.40. The statement, the message was believable; 26.6% strongly disagreed, 53.2% disagreed and 10.4% were undecided 7.7% agreed and only 2.3% of the participants, strongly agreeing and the mean 2.0. When asked if the message was acceptable in their culture, 7.7% strongly disagreed, 14.7 disagreed, 61.3% were undecided, 16.2% agreed, 0.5% strongly agreed with a mean of 2.90 (Table 4).

- **Message language appropriateness, understandability, respectful and authenticity**

On the statement, the language used was appropriate; 8.1% strongly disagreed, 36.9% disagreed, 30.2% were undecided, 21.2% agreed, with only 3.6% strongly agreeing. Giving a mean of 2.75. The participants disagreed on these two statements. The language used in the message was understandable; 14.4% strongly disagreed, 36.0% disagreed, 23.9% were undecided, 15.8% agreed and 9.9% strongly agreeing, with a mean of 2.71. The language in the message was respectful; 14.0% strongly disagreed, 25.7% disagreed, 42.8% were undecided, 15.3% agreed with 2.3% strongly agreeing. Giving a mean of 2.66. The statement 'I understood the message on routine immunization well'; the majority, 37.4% strongly disagreed, 29.7% disagreed, 13.5% were undecided and only 11.7% agreed and 7.7% said they strongly agreed, giving a mean of 2.23 (Table 4).

Table 4: Content message factors

INDICATORS	SD	D	U	A	SA	MEAN	STD. DEV
The message was clear	27.0%	23.9%	20.3%	18.0%	10.8%	2.62	1.339
The message was accurate	9.0%	32.9%	39.6%	13.5%	5.0%	2.73	.975
The message was authentic	21.2%	36.0%	27.5%	12.2%	3.2%	2.40	1.049
The message was believable	26.6%	53.2%	10.4%	7.7%	2.3%	2.06	.938
The message was acceptable in my culture	7.7%	14.4%	61.3%	16.2%	0.5%	2.90	.803
The language used was appropriate	8.1%	36.9%	30.2%	21.2%	3.6%	2.75	.996
The language used in the	14.4%	36.0%	23.9%	15.8%	9.9%	2.71	1.188

message	was							
understandable								
The language in the	14.0%	25.7%	42.8%	15.3%	2.3%	2.66	.974	
message was respectful								
I understood the message	37.4%	29.7%	13.5%	11.7%	7.7%	2.23	1.274	
on routine immunization								
well								

Logistic regression: Message content and adoption

The objective was to establish the influence of content message on adoption of routine immunization of children aged 0-5 years in Bomet County. Logistic regression was conducted and based on this model, an output between content message and adoption of routine immunization was derived. In this section, the variables in the equation table include a constant only, so every respondent had the same chance of saying Yes or No for the factors that determine adoption of routine immunization. Before the inclusion of the variable (content message), suggest that 53.0% of the respondents agreed that the children had been immunized (table 6).

Considering Variables in the Equation table 7, the intercept-only model was $\ln(\text{odds}) = .521$. If both sides of this expression were exponentiated, the predicted odds of $[\text{Exp}(B)] = 1.127$ was obtained. That is, the predicted odds, of those who agreed to have had their children immunized, was 1.127. Since 194 of the respondents said Yes while 172 said No, the observed odds was $194/172 = 1.127$.

Table 6: Classification Table for Content message

Observed		Predicted		
		Adoption of routine immunization		Percentage Correct
		Yes	No	
Step 0	Adoption of routine immunization NO	0	172	0.000
	YES	0	194	100.0
Overall Percentage				53.00
a. Constant is included in the model.				
b. The cut value is .500				

Table 7: Variables in the Equation for content message

	B	S.E.	Wald	Df	Sig.	Exp(B)
Step 0 Constant	.119	.135	.771	1	.380	1.127

Inclusion of content message in the model, table 8 was obtained. The omnibus Tests of Model Coefficients for Message content table displayed the outcome of the Likelihood Ratio (LR) test. LR measures whether the inclusion of the variables in the block contributes significantly to model fit. P-value was employed in making decision. The omnibus test models for model recorded p-values of 0.000 (table 10). The Summary model table for content message logistic regression model table gives the values for two pseudo R² (Cox & Snell R-Square and Nagelkerke R-Square) values. R² measures the extent to which explanatory explains the variation in the dependent variable. The two pseudo R² results were; 0.112 to 0.149 (table 9).

Block 1: Method = Enter (Content message)**Table 8:** Omnibus Tests of Model Coefficients for Content message

Model 1		Chi-square	Df	Sig.
Step 1	Step	25.950	1	.000
	Block	25.950	1	.000
	Model	25.950	1	.000

Table 9: Model Summary for content message

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	276.876 ^a	.112	.149
2	237.091 ^a	.259	.346

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

Table 10: Model 1 Equation table

	B	S.E.	Wald	Df	Sig.	Exp(B)
Step 1 ^a Content message	1.767	.385	21.082	1	.000	5.855
Constant	-4.817	1.074	20.109	1	.000	.008

a. Variable(s) entered on step 1: Content message

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 the level 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 as the study found that coverage was higher in areas where most caregivers generally had knowledge about vaccine preventable diseases symptoms. The occupation of a caregiver was not found to have an 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. This analogy does not relate with other 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 relation 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).

- **Influence of content message on adoption of routine immunization**

The objective was to investigate the influence of content message on adoption of routine immunization with the last three months prior to the study. This was meant to test message availability and frequency. Majority (60.8) of the participants affirmed that they had received a message on routine immunization, with a significant number (39.2%) saying they had not. This translates to knowledge gap and therefore affect adoption of routine immunization. Message availability, clarity, authentic, accuracy, cultural acceptability and language has been documented by researchers as an important attribute in communication process. These findings agrees with those of O'Connell & Wonodi, (2015), in a study on system strengthening in routine immunization, with the findings where the researcher found that message availability played a significant role in adoption of routine immunization.

Scholars have found that message content has significant influence on immunization adoption. Oldstein (2015), found that message can affect uptake of vaccination if it is not available, clear, specific and not in a language that the receiver understands. However, Wolicki, J. (2015), in a study found that content message plays a role in adoption of routine immunization but only if the receiver has prior information and intent on the subject and therefore message only acts as a reminder. Further, another study on the role of communication in adoption of routine immunization confirmed that message availability is an important attribute in communication process (Asuman et al., 2018).

When the key informant were asked if the Sub-county conducts education sessions on routine immunization, they affirmed to this, however the majority said that they do not have adequate staff to conduct the session. For example one of the key informant said;

'As much as we are willing to conduct education sessions, we have a challenge because of the shortage of staff'.

According to them, Health workers, specifically nurses, are the one that conduct health education every morning before the services are offered. When this does not happen for whatever reason, both message availability and frequency is limited and so the client/care giver does not get the information. It follows that they have no chance to get motivation for adoption of routine immunization. This factor was found to have contributed to the low adoption of routine. When caregiver were asked if the health workers were ready to answer their questions, they strongly disagreed and this can be attributed to the workload and burn out due to personnel shortage.

These findings shows that since the message was not clear, the participants would not be able to decide on whether it was authentic, believable and acceptable or not. Studies have attributed low adoption of routine immunization to content message not being clear, specific, timely and repeated The finding again suggest that the message was not acceptable. The study found gaps in these attributes. The fact that large proportion of the population was undecided, on whether the message was acceptable clearly suggest that majority of the population perhaps did not understand the message content they had received. In a study in

Nigeria, a scholar attributed the knowledge gap to poor message construction, message that were not tailored to the target audience and poor communication skills on the part of the communicator (Oku, 2017). It was further found that the message was not believable.

The findings showed that the participants did not understand the language. Therefore, they were not sure if the language used was respectively. This could have led to the reason why the message on routine immunization had the majority of the participants not understanding it well and ended up responding as undecided (table 5). The study shows that there are gaps in content message in terms of attributes of a good communication message. Routine immunization messages were found to be infrequent and even when it is available, the language used is not clear. This study agrees with a scholars who have stated that, for an effective message, the sender should use clear and simple language understood by the caregivers to enable the caregiver to make informed choices (Olorunsaiye & Degge, 2016).

Qualitative data further illustrated the gap in conducting routine immunization awareness in the County. For example, one of the key informant said;

'As much as we are willing to conduct education sessions, we have a challenge because of the shortage of staff since the same nurses who are expected to conduct health educations sessions are the same one expected to attend the clients'.

The above findings mirrors that of Zainabu M., (2015) who found out that shortage of staff contributed to poor maternal and child services provision in many public health facilities.

The omnibus test models was significant recording p-values of 0.000. The Summary model table for content message logistic regression model table gives the values for two pseudo R² (Cox & Snell R-Square and Nagelkerke R-Square) values was conducted. The two pseudo R² were; 0.112 to 0.149. Therefore it was concluded that between 11.2% to 14.9% of the variation in adoption of routine immunization of children aged 0-5 years in Bomet County was explained by content message. The correct classification rate for the model was recorded and the outcome indicated that classification rate had increased by 8.2% to 61.2%. Meaning; $61.2 - 53.0 = 8.2\%$. Following inclusion of message content in the block, the relationship between the predictor variable content message and adoption of routine immunization is given by logistic regression equations expressed as:

$$Y = -4.817 + 1.767X_1$$

The model indicated that for every unit of content message, the value of adoption of routine immunization of children aged 0-5 years in Bomet County changes by 1.767. Therefore, content message had significant positive influence on adoption of routine immunization of children aged 0-5 years in Bomet County.

CONCLUSION

The main objective was to establish the influence of Content message on adoption of routine immunization of children aged 0-5 years in Bomet County. Analysis using Logistic regression was performed and based on logistic model, the output between predictor variable and adoption of routine immunization was classified, giving the values of two pseudo R² as; 0.112 to 0.149. Therefore it was concluded that between 11.2% to 14.9% of the variation in adoption of routine immunization of children aged 0-5 years in Bomet County was explained by content message.

In summary, the study participants had apathy, nearing to negative attitude towards routine immunization services. This was demonstrated by the reluctance they demonstrated in answering the questioner, with quite a high number being undecided on even very simple question relating to the study. Content message attributes had positive influence on adoption of routine immunization. This was the reason for rejection of Null hypothesis; there is no

significant influence of content message on adoption of routine immunization in Bomet County.

RECOMMENDATIONS

Bomet County should focus on persuasive communication in order to improve adoption of routine immunization. For the communication to be effective and sustain adoption of routine immunization, based on the study findings, the researcher gave the following recommendations;

1. Routine immunization specific messages, which are 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. Secondly, 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. Thirdly, 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, in which are the study identified a gap.

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