International Journal of Community Medicine and Public Health
Matoke VO et al. Int J Community Med Public Health. 2024 Nov;11(11):4198-4204
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20243274

Original Research Article

Influence of male targeted short message service on knowledge, nature of attitude and male involvement on uptake of family planning among spouses in Marsabit County, Kenya

Vincent O. Matoke[1,2]*, Eliphas M. Gitonga[1], Isaac O. Owaka[3], Geoffrey M. Okari[4], Michel Mutabazi[5], Gideon M. Ogutu[2], Felix B. Odhiambo[2], Daniel K. Anyika[2], Ruth Salima[2], Douglas S. Okenyoru[2]

[1]Department of Environmental and Occupational Health, School of Health Sciences, Kenyatta University, Nairobi, Kenya
[2]Department of Community Health and Development, Faculty of Science, The Catholic University of Eastern Africa, Nairobi, Kenya
[3]Department of Family Medicine, Community Health and Epidemiology, School of Health Sciences, Kenyatta University, Nairobi, Kenya
[4]Department of Health Management and Informatics, School of Health Sciences, Kenyatta University, Nairobi, Kenya
[5]Department of Health Systems Management and Development, School of Public Health, Amref International University, Nairobi, Kenya

Received: 09 August 2024
Revised: 18 September 2024
Accepted: 20 September 2024

***Correspondence:**
Dr. Vincent O. Matoke,
E-mail: omwengavincent96@yahoo.com

ABSTRACT

Background: Family planning services helps the individuals or couples to regulate the number and determine healthy spacing and timing of pregnancies. Globally, contraceptive prevalence stands at 49.0%, Sub-Saharan Africa at 29.0%, Kenya at 56.9% and Marsabit County at 5.6%. Some of the reasons given for low uptake include low knowledge level, negative attitude and lack of male involvement on family planning matters. This study aimed at establishing the influence of male targeted short message service on knowledge, nature of attitude and male involvement on uptake of family planning among spouses in Marsabit County.
Methods: A pre-test and post-test quasi experimental study design was adopted involving randomly selected 220 couples from Laisamis (control group) and Moyale (intervention group) sub-counties. Intervention of male targeted short message service was offered weekly to male spouses from Moyale sub-county. A questionnaire was used to collect data. Data analysis was done using SPSS. All the required ethical and logistical considerations were adhered to accordingly.
Results: Male targeted short message service increased level of knowledge significantly (OR 4.173, p=0.001), changed nature of attitude (OR 2.7335, p=0.004) and male involvement in family planning (OR 4.4306, p=0.001).
Conclusions: The study concluded male targeted SMS intervention increased level of knowledge, attitude changed and males were involved. The County government of Marsabit should engage opinion leaders in family planning to help in educating and changing the attitude of the men towards family planning.

Keywords: Attitude, Family planning, Knowledge, Male targeted short message service

INTRODUCTION

Family planning refers to a deliberate effort which allow people to regulate the number of children and determine healthy spacing and timing of pregnancies.[1] There are a number of benefits attributable to family planning uptake including the reduction in the spread of HIV to newborn babies; reduction of maternal mortality and morbidity; reduction in neonatal, infant and child mortality; reduction recourse to often unsafe abortion as well as improvement in education and employment opportunities for women who are able to delay initiation of childbearing. Sustainable development goal number 3 target 3.7 has prioritized universal access to sexual and reproductive care, family planning and education.[2]

Male spouses' involvement on matters of family planning deserves attention since men can influence their spouses to use or not use any family planning method.[3] Male involvement not only means use of condoms and seeking vasectomy but also encouraging and supporting their spouses in natters of contraception. Male spouses can be involved through providing culturally friendly health education with child spacing messages rather than family planning itself since maybe having a negative attitude towards the contraceptive commodities.[4] Thus, involving men will have a significant role in overall uptake of family planning by increasing their availability, accommodation and acceptability.[5] Additionally, those family planning centers should be made more attractive to male partners.[6] Approximately 190 million women of reproductive age worldwide are not using any family planning method. The global contraceptive prevalence stands at 49.0% with sub-Saharan Africa accounting for the lowest at 29.0%.[7] In Kenya the modern contraceptive prevalence rate stands at 56.9% while in Marsabit County stands at 5.6% with a 37.6% un met need for family planning.[8]

Low uptake of family planning has been associated with high maternal mortality rates across the world. In Kenya, the rate of maternal mortality stands at 342/100,000 which is high than WHO target of 147/100,000 live births.[9] Marsabit County is among the top-five counties with high burden of maternal mortality currently standing at 1,127 per 100,000 live births.[10] Low contraceptive prevalence has also been associated with increased neonatal, infant and child mortality; increased cases of unsafe abortion as well as reduced opportunities for education and employment for women who are unable to delay initiation of childbearing.[11]

One of the reasons given for low contraceptive uptake among women is fear of opposition and lack of support from their partners.[12] Low knowledge levels, social stigma, shyness, embarrassment, and job responsibilities contribute to the low male involvement in family planning.[11] Contraceptive use has been left to be a women affair thus men not being involved thus lacking crucial knowledge thus affecting their attitude towards family planning.[13] Study from Rwanda showed that inconsistent FP messaging, and lack of male partner involvement were the main factors influencing non-use.[14]

Thus, this study aimed at establishing the influence of male targeted short message service on knowledge, nature of attitude and male involvement on uptake of family planning among spouses in Marsabit county, Kenya.

METHODS

Design

The study employed a pretest-posttest quasi experimental study design to determine the influence of male targeted SMS intervention on level of knowledge, nature of attitude, male involvement on family planning uptake among couples.

Intervention

The intervention for this study involved four months male targeted short message service on family planning. The respondents in the intervention group received one message per week for the sixteen weeks from November, 2023 to end of February, 2024. Both the intervention group and the control group were again evaluated two months following the completion of the intervention.

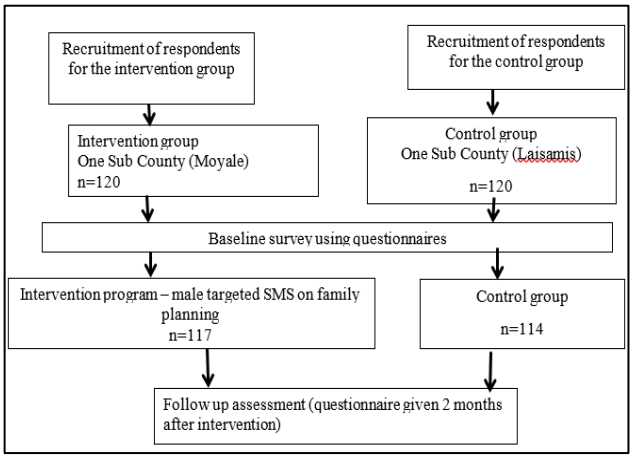

Figure 1: Study flow chart.

Study location

The study was carried out at Marsabit County, located to the northern peak of Kenya, sharing more than 500 km of boarder with Ethiopia to the North and North East, Wajir County to the east, Isiolo County to the south east, Samburu County to the south and south west and Lake Turkana to the west and north west. The county has a population of 459,949 with 243,548 (53%) male and 216,219 (47%) female covering 70,944 sq. km.[15] The county has four sub-counties namely; North Horr, Laisamis, Saku and Moyale. Moyale and Laisamis sub-counties were purposively selected for the study.

Study participants

The study included couples who consented to participate in the baseline and evaluation survey. The couples were permanent residents of the specified sub counties with no plans to relocate within two years. The study also included couples whose female partners were within the reproductive age (15-49 years). Additionally, the male partners should have owned or had access to mobile. However, the study excluded male spouses whose spouse were pregnant during recruitment.

Sampling

Marsabit County was purposively selected since was among the bottom three counties with the lowest modern contraceptive uptake and the highest rate of unmet needs of family planning. Moyale and Laisamis sub counties were purposively chosen since they were far away from each other thus reducing the chances of cross-social interactions and transfer that might lead to knowledge contamination. Butiye and Sololo wards from Moyale and Logologo and Laisamis wards from Laisamis were randomly selected. Kamboe and Merille community health units from Logologo and Laisamis wards in Laisamis sub-county while Butiye and Sololo and Makutano from Butiye and Sololo wards from Moyale sub-county were randomly selected.

The households from the community health units were selected via systematic random sampling using a sample frame consisting of a list of households given by community health promoters. If a household had eligible participants, they were chosen to participate.

Sample size determination and distribution

A formula was applied in calculating the sample size for comparison of two proportions.[16] On calculation the total number of 240 couples were enrolled into for both arms.

Research instruments

Questionnaires were utilized in collection of data. Family planning uptake and male involvement was captured from female spouses while knowledge and nature of attitude was captured from male spouses at both baseline and endline surveys. The pre-test was done at Saku sub-County using a total of 24 (10% of the sample size) of couples.

Data management and analysis

Data was cleaned, entered and managed in the SPSS software version 22.0 for descriptive and inferential analysis. Chi-square/fishers exact tests and logistic regression analysis was used to determine association and influence of male targeted short message service on knowledge level, nature of attitude and male involvement.[17]

Logistical and ethical considerations

The researcher obtained approval and authorization from Kenyatta University graduate school. Ethical permit was sought from Kenyatta University Ethics and Review Committee. Further research permit to conduct the research were sought from National commission for Science, Technology and innovation. Permission to carry out the study was also sought from Marsabit County and local leadership. Respondents were required to sign a written consent before being interviewed. Privacy and confidentiality of information obtained was assured.

Patient and public involvement statement

The tools were pretested and inputs from the participants were incorporated. The participants were also asked on the preferred language of questionnaire and suggestions on the best time/day to be sent messages. The results were disseminated to the participants by the researcher, community health promoters and the county bulletins.

RESULTS

Influence of short message service on level of knowledge and uptake of family planning

Table 1 shows the influence of level of knowledge on uptake of family planning. Knowledge was measured by administering the thirty-seven questions on the items of meaning of family planning, eligibility, methods of family planning, common side effects of family planning, benefits, places where services are provided and common side effects. Every correct response was scored mark while every incorrect response was scored zero. The minimum total score was zero while the maximum total score was thirty-seven marks. The knowledge scores were further categorized into high (30-37), moderate (22-29) and low (<22). There was a significant statistical association between male targeted short message and level of knowledge (χ^2=26.526, p=0.001). Male targeted short message service increased level of knowledge significantly (OR 4.173, p=0.001).

Further results as in Table 2 revealed that there was a significant statistical association between level of knowledge and uptake of family planning in the intervention group (χ^2=6.537, p=0.038). Level of knowledge increased uptake of family planning (OR 3.1667, p=0.016).

Table 1: Influence of short message service on level of knowledge.

Association of short message service on level of knowledge						
Group	**Level of knowledge**			χ^2	**DF**	**P value**
	High (n=52)	**Moderate (n=69)**	**Low (n=101)**			
Control (n=108)	15 (28.8%)	25 (36.2%)	68 (67.3%)	26.526	1	p<0.001
Intervention (n=114)	37 (71.2%)	44 (63.8%)	33 (32.7%)			
Influence of short message service on level of knowledge (logistic regression)						
Variable	**Category**	**Odds ratio (OR)**	**P value**	**Confidence interval (CI)**		
Male targeted SMS	No (reference)	4.173	<0.001	2.378		7.323
	Yes					

Table 2: Association and influence of level of knowledge on uptake of family planning.

Association between level of knowledge and uptake of family planning						
Control group (%)						
Level of knowledge	**Uptake of FP (n=22)**	**Non-ptake of FP (n=86)**	**χ^2/Fishers exact**		**DF**	**P value**
High (n=15)	3 (13.6)	12(14.0)	0.415		2	P*=0.813
Moderate (n=25)	4 (18.2)	21(24.4)				
Low (n=68)	15 (68.2)	53(61.6)				
Intervention group (%)						
Level of knowledge	**Uptake of FP (n=45)**	**Non-uptake of FP (n=69)**	**χ^2**		**DF**	**P value**
High (n=37)	19 (42.2)	18 (26.1)	6.537		2	P=0.038
Moderate (n=44)	11 (24.5)	33 (47.8)				
Low (n=33)	15 (33.3)	18 (26.1)				
Influence of level of knowledge on uptake of family planning						
Variable	**Category**	**Uptake of FP**		**Odds ratio (OR)**	**P value**	**Confidence interval (CI)**
		Uptake	**Non-uptake**			**Lower**	**Upper**
Level of knowledge (intervention)	Low (reference)						
	High	19	18	3.1667	0.016	1.2385	8.0965
	Moderate	11	33				

P*=Fishers exact.

Table 3: Influence of short message service on nature of attitude.

Association of short message service on nature of attitude						
Group	**Nature of attitude (%)**			χ^2	**DF**	**P value**
	Positive (n=93)	**Negative (n=129)**				
Control (n=108)	32 (34.4)	76 (58.9)		33.387	1	0.001
Intervention (n=114)	61 (65.6)	53 (41.1)				
Influence of short message service on nature of attitude (logistic regression) (%)						
Variables	**Positive**	**Negative**	**Odds ratio (OR)**	**P value**	**Confidence interval**	
No male targeted SMS (reference)	32 (34.4)	76 (58.9)	2.7335	0.004	1.5720	4.7531
Male targeted SMS	61 (65.6)	53 (41.1)				

Table 4: Influence of nature of attitude on uptake of family planning.

Association between nature of attitude and uptake of family planning					
Control group (%)					
Nature of attitude	**Uptake of FP (n=22)**	**Non-uptake of FP (n=86)**	**χ^2**	**DF**	**P value**
Negative (n=76)	18 (81.8)	58 (67.4)	1.737	1	P*=0.295
Positive (n=32)	4 (18.2)	28 (32.6)			
Intervention group (%)					
Nature of attitude	**Uptake of FP (n=45)**	**Non-uptake of FP (n=69)**	**χ^2**	**DF**	**P value**
Negative (n=53)	21 (46.7)	32 (46.4)	0.001	1	P=1.000
Positive (n=61)	24 (53.3)	37 (53.6)			

P*=Fishers exact.

Influence of short message service on nature of attitude and uptake of family planning

Table 3 shows the influence of short message service on nature of attitude towards family planning. A 5-point Likert scale was used to measure nature of attitude on twelve statements. The twelve statements had a minimum score of twelve and maximum score of sixty. The scores were further divided into negative two categories. Total scores of less than average (<36) was dichotomized as negative attitude while those of at least average (>36) was dichotomized as positive attitude. There was a significant statistical association between male targeted short message and nature of attitude (χ^2=33.387, p=0.001). Male targeted short message service changed the nature of attitude towards family planning (OR 2.7335, p=0.004).

Further results as in Table 4 showed that there was no significant statistical association between nature of attitude and uptake of family planning for both arms.

Influence of short message service on male involvement and uptake of family

Table 5 shows the influence of short message service on male involvement in family planning matters. Male involvement was assessed by focusing on four aspects including discussing use, financial support, moral support ad accompanying spouse to place of uptake. Those who participated in at least two of the four aspects were considered to have been involved while those who participated in less two aspects were considered to have not been involved. There was a significant statistical association between male targeted short message and male involvement (χ^2=27.426, p=0.001).

Table 5: Influence of short message service on male involvement.

Association of short message service on male involvement						
Group	**Male involvement (%)**					
	Yes (n=128)	**No (n=94)**	**χ^2**	**DF**	**P value**	
Control (n=108)	43 (33.6)	65 (69.1)	27.426	1	0.001	
Intervention (n=114)	85 (66.4%)	29 (30.9)				
Influence of short message service on male involvement (logistic regression)						
Variables	**Yes (%)**	**No (%)**	**Odds ratio (OR)**	**P value**	**Confidence interval (CI)**	
					Lower	**Upper**
No male targeted SMS (reference)	43 (33.6)	65 (69.1)	4.4306	<0.001	2.5030	7.8420
Male targeted SMS	85 (66.4)	29 (30.9)				

Table 6: Association and influence of male involvement on uptake of family.

Association between male involvement and uptake of family planning							
Control group							
Variables	**Category**	**Uptake of FP (%)**	**Non-uptake of FP**	**χ^2**	**DF**	**P value**	
Male involvement (n=108)	Yes	14 (63.6)	29 (33.7%)	6.543	1	0.011	
	No	8 (36.4)	57 (66.3%)				
Intervention group							
Male involvement (n=114)	Yes	40 (88.9)	45 (65.2%)	8.046	1	0.005	
	No	5 (11.1)	24(34.8%)				
Influence of male involvement on uptake of family planning							
Variables	**Category**	**Uptake of FP**		**Odds ratio (OR)**	**P value**	**Confidence interval (CI)**	
		Uptake	**Non-uptake**				
Male involvement control	No (Reference)	2	68	3.4397	0.013	1.2949	9.1371
	Yes	13	31				
Male involvement intervention	No (Reference)	6	74	4.2667	0.017	1.4879	12.2350
	Yes	12	25				

P*=Fishers exact.

Table 6 shows association and influence of male involvement on uptake of family. Male targeted short message service increased male involvement in family planning (OR 4.4306, p=0.001).

DISCUSSION

Results showed that male targeted short message service intervention influenced level knowledge. Increase in knowledge was attributed to the messages that the respondents in the intervention group received on different aspects of family planning. Study agrees with another one which revealed that text messages on family planning helped improve the knowledge.[18,19] Level of knowledge influenced uptake of family planning in the intervention group. This means that respondents who received short messages were more likely to advise their spouses to use family planning since they were more knowledge. The findings were consistent with study on determinants of modern contraceptive utilization which revealed that knowledge made people more informed about family planning and thus demand for the services.[20] These findings however contradicted whose study revealed that as much as the knowledge was improved the uptake of family planning still did not change.[21] The difference could be due to this study recruiting male spouses who were believed to be the ones who don't approve their spouses to uptake family planning. Hence involving them directly touched on the main barrier to uptake hence significantly improved uptake.

Male targeted short message service influenced nature of attitude. This means that the SMS intervention helped in changing the attitude of respondents towards family planning. Similar results were reported that the number of those with positive attitude significantly increased after health education intervention.[22] Effective interventions are likely to change attitude towards family planning among male spouses in developing countries.[23]

Male targeted short message service also influenced involvement. This means that male targeted short message service increased male involvement in providing financial support, accompanying spouse to clinics and discussing use family planning. After intervention men become involved in discussing use of family planning with their spouses.[24] Study agrees with another one on implications digital messages intervention on family planning which revealed that upon receipt of messages the number of males who were involved increased.[25] Results also revealed that there was a significant statistical association between male involvement and uptake of family planning. This means that male involvement increased uptake of family planning. This can be attributed to the fact that male involvement makes them knowledgeable on the benefits and thus approving their wife or wives to use the services. These findings were consisted with a study which revealed that male involvement intervention led to men approving family planning and thus increased uptake.[26,27]

The study encountered challenges of inaccessibility of some places due to poor road network in Marsabit County. This necessitated the data collection exercise to take longer and costly than anticipated. In the county also there was a problem of language barrier which necessitated translation of data collection tools and messages sent to intervention group. The study was also limited to Moyale and Laisamis sub-counties.

CONCLUSION

The study concluded that male targeted short message service significantly increased knowledge, changed attitude and increased male involvement. The changes were largely in the intervention group where the SMS predicted changes in knowledge (OR=4.173, p=0.001), nature of attitude (OR= 2.73, p=0.004) and male involvement (OR=4.43, p=0.001). The changes in level of knowledge (OR=3.167, p=0.016) and male involvement (OR=4.267, p=0.017) predicted uptake of family planning. However, nature of attitude did not predict uptake of family planning. Thus, there is need to engage community, religious and opinion leaders in family planning to help in advocating, educating and changing the attitude of the men towards family planning and thus become more involved.

ACKNOWLEDGEMENTS

We acknowledge the research participants and research assistants for contributing to the success of this piece of work. We also would wish to thank our colleagues at the catholic university of eastern Africa, Kenyatta university and Amref International University for their moral support and positive criticism.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Kenyatta University Ethics and Review Committee ((PKU/2809/11933)

REFERENCES

1. World Health Organization. Trends in Maternal Mortality: 1990–2015 Estimates by WHO, UNFPA, UNICEF, The World Bank and the United Nations Population Division. Geneva: World Health Organization; 2018.
2. UNDP. Sustainable Development Goals. 2015. Available from: https://www.undp.org/sustainable-development-goals. Accessed on 2 June 2024.
3. de Vargas Nunes Coll C, Ewerling F, Hellwig F, De Barros AJ. Contraception in adolescence: the influence of parity and marital status on contraceptive use in 73 low-and middle-income countries. Reprod Health. 2019;16:1-2.
4. Kriel Y, Milford C, Cordero J, Suleman F, Beksinska M, Steyn P, et al. Male partner influence on family planning and contraceptive use: perspectives from community members and healthcare providers in KwaZulu-Natal, South Africa. Reprod Health. 2019;16:1-5.

5. Muttreja P, Singh S. Family planning in India: The way forward. Indian J Med Res. 2018;148(Suppl1):S1.
6. Kibira SP, Karp C, Wood SN, Desta S, Galadanci H, Makumbi FE, et al. Covert use of contraception in three sub-Saharan African countries: a qualitative exploration of motivations and challenges. BMC Public Health. 2020;20:1-10.
7. United Nations Department of Economic and Social Affairs, Population Division. World Family Planning 2020 Highlights: Accelerating action to ensure universal access to family planning. New York: United Nations. 2020.
8. Kenya National Bureau of statistics. (2022). Kenya Demographic and Health Survey. Rockville, Maryland.
9. WHO, UNICEF, UNFPA, World Bank Group, and the United Nations Population Division. Trends in Maternal Mortality: 2000 to 2017. Geneva: World Health Organization; 2019.
10. NCPD and UNFPA (2015). Kenya Population Situational Analysis. National Council for Population and Development, Nairobi. 2015. Available from: https://www.unfpa.org/sites/default/files/admin-resource/FINALPSAREPORT_0.pdf. Accessed on 2 June 2024.
11. Diamond-Smith N, Warnock R, Sudhinaraset M. Interventions to improve the person-centered quality of family planning services: a narrative review. Reprod Health. 2018;15(1):1-17
12. Ding R, Guo C, Song X, Zheng X. Male knowledge, attitude and practice and partner pregnancy among Chinese unmarried youth. PloS One. 2019;14(3):e0214452.
13. Olakunde BO, Sam-Agudu NA, Patel TY, Hunt AT, Buffington AM, Phebus TD, et al. Uptake of permanent contraception among women in sub-Saharan Africa: a literature review of barriers and facilitators. Contraception. 2019;99(4):205-11.
14. Tounkara MS, Ingabire R, Comeau DL, Karita E, Allen S, Nyombayire J, et al. A mixed-methods study of factors influencing postpartum intrauterine device uptake after family planning counseling among women in Kigali, Rwanda. PLoS One. 2022;17(11):e0276193.
15. Kenya National Bureau of statistics. Kenya Demographic and health Survey 2019. Rockville, Maryland. 2019.
16. Chan YH. Randomised controlled trials (RCTs)-sample size: the magic number? Singapore Med J. 2003;44(4):172-4.
17. Stratton SJ. Quasi-experimental design (pre-test and post-test studies) in prehospital and disaster research. Prehosp Disast Med. 2019;34(6):573-4.
18. Barro A, Ngangue P, Bationo N, Soubeiga D, Pafadnam Y, Kaboré SS, et al. Barriers and facilitators to the implementation of cell phone interventions to improve the use of family planning services among women in Sub-Saharan Africa: a systematic review. medRxiv. 2022;2022:04.
19. Leight J, Hensly C, Chissano M, Safran E, Ali L, Dustan D, et al. The effects of text reminders on the use of family planning services: evidence from a randomised controlled trial in urban Mozambique. BMJ Glob Health. 2022;7(4):e007862.
20. Tesema ZT, Tesema GA, Boke MM, Akalu TY. Determinants of modern contraceptive utilization among married women in sub-Saharan Africa: multilevel analysis using recent demographic and health survey. BMC Women's Health. 2022;22(1):181.
21. Tesema ZT, Tesema GA, Boke MM, Akalu TY. Determinants of modern contraceptive utilization among married women in sub-Saharan Africa: multilevel analysis using recent demographic and health survey. BMC Women's Health. 2022;22(1):181.
22. Gelgelo D, Abeya SG, Hailu D, Edin A, Gelchu S. Effectiveness of health education interventions methods to improve contraceptive knowledge, attitude, and uptake among women of reproductive age, Ethiopia: a systematic review and meta-analysis. Health Serv Res Manag Epidemiol. 2023;10:23333928221149264.
23. Tazoe H, Tomozawa R, Sato M, Anzai S, Hosokawa R. Evaluating the effectiveness of educational interventions in family planning for men in developing countries: a systematic review. JMA J. 2024;7(1):40-51.
24. Mulatu T, Sintayehu Y, Dessie Y, Dheresa M. Male involvement in family planning use and associated factors among currently married men in rural Eastern Ethiopia. SAGE Open Med. 2022;10:20503121221094178.
25. Okunlola DA, Alawode OA, Awoleye AF, Ilesanmi BB. Internet use, exposure to digital family planning messages, and sexual agency among partnered women in Northern Nigeria: implications for digital family planning intervention. Sex Reprod Health Matters. 2023;31(4):2261681.
26. Kwawukume SAK, Laar AS, Abdulai T. Assessment of men involvement in family planning services use and associated factors in rural Ghana. Arch Public Health. 2022;80(1):1-8.
27. Kamulegeya LH, Bwanika J, Banonya J, Atuhaire J, Musinguzi D, Nakate V, et al. Feasibility and acceptability of a Ugandan Telehealth Engagement platform for informational messaging on modern contraception: pilot cross-sectional study. JMIR Form Res. 2022;6(6):e34424.

Cite this article as: Matoke VO, Gitonga EM, Owaka IO, Okari GM, Mutabazi M, Ogutu GM, et al. Influence of male targeted short message service on knowledge, nature of attitude and male involvement on uptake of family planning among spouses in Marsabit County, Kenya. Int J Community Med Public Health 2024;11:4198-204.