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A MODEL TO PROMOTE UTILIZATION OF SKILLED BIRTH AMONG WOMEN OF REPRODUCTIVE AGE IN KANDARA SUB-COUNTY, MURANG'A COUNTY, KENYA

Daniel Muya Gachathi[1*] *, Drusilla Makworo*[1] *& Catherine Mwenda*[2]

Institutional Affiliations:

1. Jomo Kenyatta University of Agriculture and Technology
2. South Eastern Kenya University

*Corresponding author's e-mail: destiny.gachathi@gmail.com

Abstract

Background: Lack of utilization of skilled delivery services by pregnant women contributes to increased number of maternal and neo-natal morbidities and mortalities. In Kenya, skilled deliveries stand at 62% while unskilled deliveries stand at 38%.The maternal mortality ratio in Kenya is at 462 per thousand live births. In the study area, skilled deliveries stand at 65% while home deliveries are at 35%. The main aim of this study was to develop a model of care to improve utilization of skilled birth attendance in the study area.

Methods: A qualitative research design was employed to gather information. Sample size: Women of Reproductive age n= 48, Community Health Volunteers (n=48), Community Extension Workers (n=10) and 7 health administrators. Data Management: Data was thematically arranged and analyzed using NVIVO software version 13.

Results: The study identified key strategies, including client education, family and community involvement, and alignment with government policies, to enhance skilled delivery utilization. These findings contributed to strategies that yielded in development of a model of care for promoting skilled birth attendance and improving maternal-child health in the study area and beyond.

Conclusion: Through a baseline study, the research team identified key client experiences and strategies, leading to the formulation of a model. Evaluation of the model, utilizing criteria from Parady et al. (2021), involved respondent ratings on a Likert scale. A mean score of 4 or higher was deemed acceptable for model adoption, while elements below 3 were eliminated and those at 3 were modified based on expert recommendations. The threshold for agreement, set at a mean score of 4, ensured reliability in consensus decision-making (Bascom et al, 2018). The validated model is now ready for testing and subsequent implementation.

Recommendation: Government policies to adopt the model's strategies and advocates for a more extensive study, possibly an RCT or meta-analysis, for a thorough understanding. Regular evaluations and critiques of the developed model, along with exploration of diverse models in future studies, are vital for evidence-based decision-making by policymakers, ensuring ongoing improvement in care quality.

Key words: *Skilled birth attendant, skilled birth Strategy, Utilization of skilled delivery services, Qualitative Analysis and Model*

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INTRODUCTION

The period of labor and delivery is critical and requires assistance from a competent Skilled 7Birth Attendant (SBA) UNICEF, 201). A conducive environment is suitable to support mother in labor is paramount (Edwards, 2020). Globally, approximately 303,000 maternal and 2.5 million neonatal mortalities occurred. In the year 2017 due to lack of skilled care during labor and child birth. (WHO, 2017). In Kenya, the maternal mortality rate is still high at 342 deaths per 100,000 live births (UNICEF, 2021). Maternal and neonatal morbidity and mortality rates can be lowered by about 50% if delivery occurs with the assistance of a Skilled Birth Attendant (SBA) (Siseho et al 2022). The main objective of this study is to develop a model of care to promote utilization of skilled deliveries among women of reproductive age in Kandara Sub County. Globally, in developed countries, over 90 % of births occur in health facilities under the care of a SBA (UNICEF, 2022).

In sub-Saharan Africa only (57 percent) of all births are delivered in a health facility (Maximore et al., 2022). In Kenya, the percentage of skilled live births stands at 89% in the year 2022 (KDHS, 2022). In central and Nairobi areas, Murang'a County has the lowest percentage of live births delivered in health facility at 96% (KDHS, 2022). According to (KHIS, 2022), skilled deliveries in Murang'a County for 2021/2022 financial year stands at 61.3% and confirmed home deliveries stand at 40%. In Kandara Sub-County home deliveries is at 42% while skilled deliveries is at 58% in the financial year 2021/2022.this is far below the global and national target of skilled deliveries at 100% (KHIS,2022). Skilled birth attendance is one of the highly effective impact interventions to reduce maternal, newborn and child mortality and morbidity (Adegoke et al, 2023) in the study area skilled deliveries stand at (65%) which is below the national and global targets of 100%. No existing model of care in the study area to handle the menace. Implementation of developed model will bridge the existing gap improving the maternal and child health as envisioned in the Kenyan vision 2030 and the sustainable development goal number 3

METHODS

The study involved Community Health Volunteers (CHVs), Community Extension Workers (CHEWs) who had worked in the study area for at least six months and excluded newly appointed ones. The local health administrators in the sub county were also included. The study applied the concept of Health Belief Model framework to explore individual health-seeking behavior and factors influencing participation in health-related activities[7]. Primary researchers and 12 experienced research assistants (2 per ward) conducted and managed the data collection. A data entry clerk with a health records and information technology degree aided in data management. The study area (Kandara Sub County) is one of the seven Sub Counties in Murang'a County. It covers an area of 235 km2 and is located about 45km to the north of Nairobi. The research adopted cross sectional study design

Women of reproductive age (15-49 years) with a recent delivery (within 1 year), Community Health Volunteers (CHV's), Community Extension Workers (CHEWS) and local facility health administrators formed part of the study population

Women -delivered in the last 12 months and residents in the area, CHEWs and CHVs who had worked in study area for the last 6months.

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While Women of unsound Mind and newly employed CHEWS and CHVS. Were excluded in the study. CHVS – 48- Stratified Random Sampling of community health units. Then, simple random sampling for CHV's, CHEW -10 censuses, Health Administrators – 7- census

Conducting three to six focus groups with 8-12 participants per group is sufficient to achieve theme saturation (90%) in a homogenous study population (Guest et al,2016). In this study, six Focus Group Discussion (FGD) sessions, each with eight participants was conducted, reaching to information saturation. A total of 48 Community Health Volunteers (CHVs) were randomly selected to represent all Community Health Units (CHUs). All ten Community Health Extension Workers (CHEWs) supervising the Community Units (CUs) participated through a census method. Additionally, seven health administrators, including medical superintendents, nurse administrators, and a sub-county public health nurse, were purposefully selected to participate in the study.

The study obtained ethical clearance from the JKUAT Ethics Review Committee (Approval number JKU/IERC/02316/0431) in November 2021 and a permit from NACOSTI (Approval number 303892, dated 6th Jan 2023). Approval from the County government of Murang'a was granted through a letter (REF NO: MOH/GEN/MUR/VOL.V/58) on December 14, 2021. Informed consent was obtained from all participants.

The researcher employed an interview guide to collect information from key informants, including ten CHEWs and seven health administrators from local health facilities. The guide incorporated both open-ended and closed-ended questions, along with probes, to ensure comprehensive exploration of the topics. Similarly, the researcher used a discussion guide during focused group discussions (FGDs) to guide the conversation and maintain consistency.

The data collection process was rigorous and systematic, ensuring accuracy and reliability through: Individual Interviews: Audio recordings and note-taking this minimized misinterpretation and provided a direct source of information, complemented by note-taking to capture additional details. FGDs included 8 participants, a research assistant, and a data clerk, ensuring diverse perspectives. The research assistant moderated discussions, maintaining structure and relevance to enhance data quality. Utilization of Equipment and Note-taking: The research assistants facilitated discussions and maintained data accuracy using audio recording equipment. Note-taking during FGDs provided supplementary qualitative insights beyond audio recordings alone. Data Clerk Involvement: A data clerk managed and organized collected data, ensuring integrity through tasks such as data entry and documentation. Overall Rigor: The selection of a skilled research assistant as moderator and the structured FGD setting demonstrated commitment to rigor. This approach, along with the involvement of a data clerk, minimized biasness and ensured systematic data handling.

The translation process involved key steps ensuring accuracy and reliability:

1. Review of Research Questions: Initial review aligned translations with research objectives, minimizing misinterpretations.
2. Familiarization with Data: Extensive reading and examination helped grasp

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cultural and linguistic nuances, aiding accurate translations.

3. Cross-Checking with Audio Recordings: Cross-checking with audio recordings ensured faithful translation, reducing potential errors.
4. Use of NVIVO Software: NVIVO software facilitated systematic coding, reducing subjective biases and improving precision.
5. Code Lists and Organization: Importing transcripts into NVIVO and developing code lists ensured systematic categorization, enhancing data understanding.
6. Analysis of Labeled Code Lists: Analyzing code lists constructed broad themes, aiding identification and correction of inaccuracies.
7. Qualitative Analysis and Detailed Notes: Qualitative analysis and detailed notes captured nuances, aligning translated content with broad themes. This integrated approach combined linguistic proficiency with systematic analysis, establishing a robust process for accurate translation and deriving meaningful insights from the data.

Respondents gave sincere information that reflected the true status in relation to their utilization of skilled birth services.

Limitations

-Passive resistance from some of the respondents

Delimitation-

Proper explanation on the purpose and approach of the study was done to the respondents

FINDINGS

The analysis of data from FGDs and KIIs identified problems and solutions/strategies for enhancing skilled delivery services as shown in table 1 below.

Table 1:problems and solutions/strategies

S/N	Identified Problem and causes	Solution /strategy to solve the problem
1	Low ANC visits	Educate and counseling the community on the importance of ANC and safe delivery.
2	Poor knowledge on danger signs	Educate and counseling community on ANC and safe delivery
3	Lack of health information on skilled delivery services offered in hospitals	Sensitization of women on the importance of skilled deliver
4	High number of unskilled deliveries	Application of multiple strategies
5	Religious and cultural beliefs	Sensitization of women on the importance of skilled delivery
6	Lack of community support	Improvement in community-based support systems
7	Lack of satisfaction with quality of health service delivery	Training of health care staff on safe delivery and professionalism.
8	Few health care workers in the facilities	Increase the delivery personnel
9	Few facilities offering skilled delivery services	Increase and improve the facilities to offer skilled delivery services

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The study findings indicated that implementing various strategies could significantly improve the utilization of skilled birth attendance services. These strategies were categorized into personal, interpersonal, community, and government levels, as presented in table 2 below.

Table 2: Theme and categories

Theme: Strategies to improve utilization of SBA services	
Category 1. Individual related	Health education and awareness creation
Category 2 Interpersonal related	Family dialogue
	Regular pregnant women seminars
Category 3. Community related	Community support groups
	Community mobilization
	Community maternal/neonatal mortality/morbidity audits
	Community advocacy
	Community based transport services
	Follow-up of pregnant women by CHVs
	Community telephone communication
category 4 Government related	Health related
	Infrastructural improvement
	staff employment and sustainability
	Provision of enough medical supplies
	Policies
	Medical services payments policies
	Reproductive health polices
	Collaboration with stake holders

Category 1: Personal level

Health education and provision of advice

Participants noted health education by various stakeholders as a reliable strategy to emphasize the significance of skilled birth attendance, risks of home deliveries, and birth preparedness. Key Informant Interviews (KIIs) affirmed this approach *"For instance, when women are taught about the risks of home deliveries and the benefits of delivering at the hospital, I think this can make them decide to utilize skilled birth attendance," (KII, 6)*

Category 2: Interpersonal level

Family dialogue

Family discussions foster awareness on pregnancy, skilled delivery, and newborn care, involving key members like spouses, parents-in-law, and neighbors. Topics should cover the woman's health, birth preparation, attendant selection, transportation, and postnatal care, as revealed in the study *"Family involvement in the care of pregnant women is crucial. Healthcare workers should conduct home visits to engage key family members in dialogues promoting birth preparedness, complication readiness, and discouraging harmful traditional practices. This ensures safe childbirth in healthcare facilities." (KII, 3)*

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Regular Seminars for Pregnant women

The study indicated that pregnant women's seminars can boost skilled birth attendance knowledge and use. In addition to tailored ANC care, pregnant women could engage and share knowledge at regular conferences.

One KII said:

"If we conduct monthly seminars for pregnant women in all wards in Kandara sub-county, we create a room for our pregnant mothers to socialize and share their experiences. The information that will be shared will help them get prepared for the birthing process and this will boost the skilled deliveries." (KII, 5)

Women development groups

The study indicated that pregnant women's seminars can boost skilled birth attendance knowledge and use. In addition to tailored ANC care, pregnant women could engage and share knowledge at regular conferences. The following statement by the respondents supported the findings:

"The women development groups in place have a network of women leaders who can help in mobilizing our pregnant women. The platforms can be used to instill knowledge to pregnant women and other women in the community on the benefits of hospital delivery as well as the risks of home delivery." (KII, 2)

Category 3: Community level

Community support groups

The findings revealed that strengthening community to have community support group is a good strategy whereby the community owns up the responsibilities of caring for its members. This was evidenced by a statement from one of the respondents when she said:

"My neighborhood has a support organization that identifies pregnant women and arranges for care, especially during birth. Cash donations and transportation arrangements. If other communities adopt such measures, most women would deliver in hospitals." (KII, 15)

Community mobilization

Community mobilization and campaigning were shown to raise awareness of skilled birth attendance services. The participants said that informing the community about home delivery dangers and hospital delivery benefits for pregnant women will increase community support for skilled delivery services.

Community maternal/neonatal deaths/morbidity audits

The findings also revealed that involving the community in maternal /neonatal audit could be a good avenue of discussing what happened and planning on how to tackle such challenges that resulted to fatality or near death and to avoid a recurrence.

One of the participants said:

"For community mobilization, the health facility should organize how to highlight cases of women who gave birth at home or in the hospital and had health issues." (KII, 17)

Community advocacy and training

The study reported that maternal deaths that occurred in the communities could also be used as advocacy and community mobilization tools to mobilize the community to utilize skilled birth attendance services. The following statement corroborated this:

"*I suggest that when a mother dies during giving birth the stake holders should take that unfortunate opportunity advocacy tool and let the community to know their role in preventing such an occurrence again." (KII, 8)*

Community based Transport services

The findings further revealed that the community should plan on how to transport its members to the hospital when need arises using the available local means. However, the community also should liaise with the nearest

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health facility for ambulance services to improve the utilization of skilled birth attendance in the community One participant explained the following:

"The community should come up with affordable means to transport its members to the hospital as well as liaise with the hospital for ambulance services as this will ensure no delay in transporting the woman in labor to the nearest health facility." (CFGD, 1-4)

Community Women ambassadors of skilled delivery services

The findings also found that the women who deliver at the health facilities should be awarded a title of "Health ambassadors" and therefore they should become good models of other women in the community, and this would go a mile in up scaling the utilization of skilled delivery services in the community. One of the Key informants claimed:

"*Make health facility birthing mothers ambassadors. If this happens, facilities will strive to make women happy with their outstanding services because ambassadors will tell the community about them." (KII, 14)*

Community health volunteers (CHV) Follow-up of ANC mothers

The findings revealed that follow-up of a pregnant woman is a good strategy in ensuring a skilled delivery at the end of gestation it will also enable pregnant women to have basic health and counseling services as per the recommended ANC visit schedules. The respondents indicated the following statements:

"Health care workers should register all pregnant women seeking ANC services with EDD at first contact. Contacts and the CHV where that woman comes from and coordinates follow-up visits to ensure she delivers in the health institution." (CFGD, 2-2)

Community telephone communication

Since practically everyone in the neighborhood has a phone, CHVs and health workers can be notified of labor through phone. Health care providers should give pregnant women and the community the hospital and ambulance driver's numbers during clinic visits and in emergencies. The participants reported this:

"Why don't hospitals give pregnant women and the community their phone numbers so people can call them when a woman gives birth? This would save time and allow health care professionals to prepare before the woman arrives." (CFGD, 6-3)

Category 4- Government related

Health related

Infrastructural improvement

The findings of this study revealed that increasing the facilities that offer skilled delivery services as one of the strategies the government can use to increase skilled delivery services as there is only one sub county hospital and two faith-based facilities that offer skilled deliveries in the sub county. This was one of the hindrances that caused many women not to deliver at the hospital as one of the respondents said:

"Our hamlet has six ANC dispensaries, but women are advised to deliver in a larger hospital. Far hospitals. Why doesn't the government upgrade one dispensary in each ward to offer delivery? This could fix this." (CFGD, 1-6)

Employment of more staff in the facilities

The findings revealed that there are shortage of staff in the health facility to handle the population of the catchment area and therefore employing more staff and replacing those who leave the service by natural attrition or by any other means is a good strategy that could

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increase the skilled delivery services. This is evidenced by claims from the respondents:
Another one said
"There *were only two nurses in labor ward with ten mothers in labor. I witnessed two women deliver alone as the midwives were busy attending to other women therefore; I propose more staff to be allocated in delivery rooms.*" *(CFGD, 3-5)*

Training staff on ethics and professionalism
The findings found that some of the staff members disregard medical ethics and acts unprofessionally and therefore further training could be a good strategy to enhance skilled delivery services. One of the respondents said:
"*Most healthcare workers lack privacy and service delivery training. One of the staff advised me that the labor ward has little privacy and that I should leave the hospital and deliver at home if I didn't cooperate during my last child's birth. To accept their duties, health care employees should be regularly instructed on professionalism and consumer privacy. Our community has six ANC dispensaries, but women should deliver in a larger hospital. Far hospitals. Why doesn't the government make one ward dispensary deliver? This may work*". *(CFGD, 3-3)*

Provision of enough medical supplies.
The findings found that the government should provide enough medical supplies in the facilities as one strategy to increase skilled delivery services. This also helps to reduce other costs that the women undertake in buying the supplies as can be evidenced by the following respondent's statement:
"Availability of medical supplies is key to health seeking behavior of women in this community. When there is enough supplies, most women come to seek health care because there is no cost as all items are available."(KII, 4)

Polices
Medical services payments policies
The findings revealed that the government should support and enforce that all women should have a medical service payment policy to cater for costs of delivery services as a strategy to enhance skilled deliveries in the area. The respondents said:
"Why doesn't the government make it mandatory for all women to have health policies like Linda mama, NHIF and Other insurance health policies? This would really boost women to deliver at the hospital as they will not have to pay any money from their pockets. Like Linda mama is absolutely free.one needs only to provide an ID card and she is registered freely."(CFGD, 2-3)

Reproductive health polices
The findings showed that the government should impose, monitor, and assess reproductive health programs like free maternal health. UHC programme and beyond zero to assess its implementation, procedure, and efficacy as good ways to improve skilled delivery services. One of the KII respondents said;
I think the free maternity services, beyond zero and UHC programme if well implemented, monitored and evaluated could be very good strategies to increase use if the skilled deliveries in our community." (KII, 16)

Collaboration with other Stake holders
The findings found that the government should collaborate with other stake holders like department of agriculture, gender, children, education, religious leaders, administration department, NGOs and private health care providers as this would bring

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synergy and boost the skilled delivery services. One of the KII Said.

"The government ought to work hand in hand with other stake holders in health if it wants to win this battle of home deliveries as they have influence on our women. Take for example churches, chiefs, teachers, NGOs like jacaranda, private health facilities. If all are involved then this problem will be a thing of the past in this area. (KII, 10)

MODEL DEVELOPMENT

The study adopted the eight steps in model development adopted from, Havenga et al, (2014,) to develop the model.

STEPS OF MODEL DEVELOPMENT

Step 1- aim of the study

The main aim of the study was to provide guidance based on evidence to improve the utilization of skilled birth attendance services in the study area.

Step 2-scope of the model-

The model implementation is in the communities and the health facilities in the study area and also in the republic of Kenya at large

Step 3-evidence from base line study-

The strategies elicited from baseline study findings were used as evidence to develop the model of care.

Step 4-identified themes and categories-

Baseline study yielded to one main theme named: "strategies" and four categories namely: individual, interpersonal, community and government levels.

Step 5 – development of draft model

A draft model composed of one theme and four categories was formulated

Step 6 - model validation (expert review and opinion

- Validation – confirms fulfillment of requirements (lecours, 2020), and is tied to meeting parties' needs (oliveira & costa, 2021).

The study adopted 6 steps of model validation (Bascom et al, 2018)

1. Elaborate selection criteria for scientific and professional experts

The researcher selected Professional expertise as the main criterion for selecting the experts with a minimum qualification of masters in midwifery (Sepehrvand, et al.2019).

2. Make scientific and professional experts list-The researcher selected 10 health experts guided by Khoiriyah et al., (2015) most of the research studies recommends 6-10 experts.
3. Contact scientific and professional experts-The researcher used email addresses and phone calls to communicate with the experts.
4. Select the Criteria for evaluation- The researcher adopted a set of criteria, based on Parady et al., (2021) work, to evaluate the model. A criterion had a Liker scale with scores ranging from score 1to 5 where: 1 strongly Disagree (SD); 2 = Disagree (D); 3= Neutral (N); 4 = Agree (A); 5 = Strongly Agree (SA).
5. Synthesis of answers Using Bascom et al.'s (2018) scoring model ,scores 2 or below were dropped, 3 underwent modifications based on expert input, and scores 4 and above were deemed suitable for

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adoption. This approach enhanced reliability and objectivity in evaluating and categorizing outcomes, ensuring suitability in line with research criteria.

6. Final analysis and publication

Eight out of ten experts had submitted their scores by the time the analysis was done hence their scores and recommendations were used for revising the model. The analysis of scores are shown in Table 3 below

Table 3: SCORES

S/N	CRITERION	MEAN SCORE	COMMENT
1	Clarity and presentation -	4.13	accepted
2	Specificity	4.35	accepted
3	Reliability	4.25	accepted
4	Clinical Flexibility	4.0	accepted
5	Effectiveness	4.13	accepted
6	Validity	4.0	accepted
7	Relevance	4.13	accepted
8	Applicability	4.25	accepted
9	Acceptability	4.13	accepted
10	Achievability	4.25	accepted
11	Utilization review	4.0	accepted
12	Output Plausibility:	3.25	Modifications done
13	Model content and structure:	3.65	Modification done
14	Linkages of the model with existing theories?	3.75	Modification done

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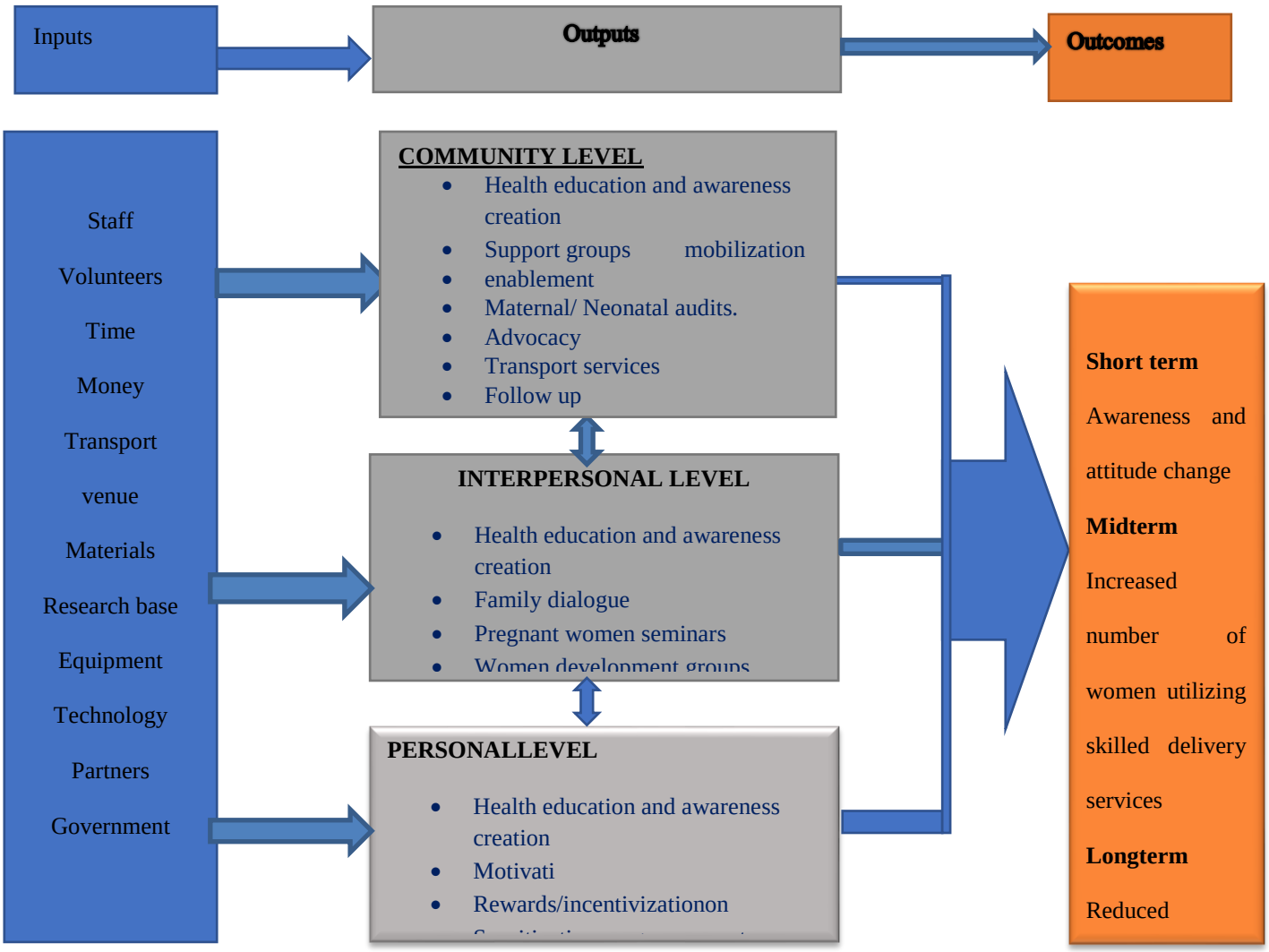

Figure 1: The Validated Model of Care

Discussion

Educating, counseling, and sensitizing communities on ANC and safe delivery enhance skilled delivery service usage, as supported by a Nepalese study emphasizing mass media's effectiveness in influencing maternal and child healthcare-seeking (Shifraw et al., 2016).

Establishing community-based support systems is a viable strategy to boost skilled delivery service utilization, aligning with an Ngabian study utilizing the three-delay model as an effective approach (Furgusion et al.,2020).• Well-developed models play a crucial role in improving health services, mirroring nursing care models that shape

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patient care organization and delivery, showcasing the profession's expertise. Model development is a trademark highlighting the uniqueness of the nursing profession (Anneli Pitkanen, 2013).

Conclusion,

This study aimed to develop a care model to enhance skilled delivery service utilization. Through a baseline study, the research team identified key client experiences and strategies, leading to the formulation of a model. Evaluation of the model, utilizing criteria from Parady et al. (2021), involved respondent ratings on a Likert scale. A mean score of 4 or higher was deemed acceptable for model adoption, while elements below 3 were eliminated and those at 3 were modified based on expert recommendations. The threshold for agreement, set at a mean score of 4, ensured reliability in consensus decision-making (Bascom et al, 2018). The validated model is now ready for testing and subsequent implementation.

Recommendations

The study recommends government policies to adopt the model's strategies and advocates for a more extensive study, possibly an RCT or meta-analysis, for a thorough understanding. Regular evaluations and critiques of the developed model, along with exploration of diverse models in future studies, are vital for evidence-based decision-making by policymakers, ensuring ongoing improvement in care quality..

REFERENCES

Adegoke, A., Utz, B., Msuya, S. E., & Broek, N. van den. (2023). Skilled birth attendants: Who is who? A descriptive study of definitions and roles from nine Sub Saharan African countries. PLOS ONE. https://doi.org/10.1371/journal.pone.0040220

Anneli Pitkanen, E. M. (2013). The effects of the Primary Nursing Care Model: A Systematic Review. Journal of Nursing & Care, 03(06). https://doi.org/10.4172/2167-1168.1000205

Barker, F., Atkins, L., & De Lusignan, S. (2016). Applying the COM-B behavior model and Journal of Audiology, 55(sup3), S90-S98. https://doi.org/10.3109/14992027.2015.1120894

Bascom, K. E., Dziodzio, J., Vasaiwala, S., Mooney, M., Patel, N., McPherson, J., McMullan, P., Unger, B., Nielsen, N., Friberg, H., Riker, R. R., Kern, K. B., Duarte, C. W., Seder, D. B.

Edwards, A. (2020). Birth environment – promoting normality. Labor Midwifery Skills, 8–8. https://doi.org/10.4324/9780429424298-3

Ferguson, L., Hasan, R., Boudreaux, C., Thomas, H., Jallow, M., & Fink, G. (2020). Results-based financing to increase uptake of

This work is licensed under a Creative Commons Attribution-Non-Commercial 4.0 International License

skilled delivery services in the Gambia: Using the 'three delays' model to interpret midline evaluation findings. BMC Pregnancy and Childbirth, 20(1). https://doi.org/10.1186/s12884-020-03387-9

Havenga, Y., Poggenpoel, M., & Myburgh, C. (2014). Developing a model. Nursing Science Quarterly, 27(2), 149–156. https://doi.org/10.1177/0894318414526814

Kenya Demographic and Health Survey 2022. (n.d.). Kenya - Kenya Demographic and Health Survey 2022. https://statistics.knbs.or.ke/nada/index.php/catalog/65

Khis systems. (2022). Kenya Health Information Systems. http://systems.health.go.ke

Khoiriyah, U., Roberts, C., Jorm, C., & Van der Vleuten, C. P. (2015). Enhancing students' learning in problem based learning: Validation of a self-assessment scale for active learning and Critical Thinking. BMC Medical Education, 15(1). https://doi.org/10.1186/s12909-015-0422-2

Lecours, A. (2020). Scientific, professional and experiential validation of the model of preventive behaviors at work: Protocol of a modified Delphi Study. BMJ open, 10(9), e035606

Maximore, L. S., Mohammed, A. G., Issahaku, G. R., Sackey, S., & Kenu, E. (2022). Prevalence and determinants of home delivery among Reproductive Age Women, Margibi County, Liberia, 2020. https://doi.org/10.21203/rs.3.rs-1497207/v1

Oliveira, A. M., & Costa, A. P. (2021). ISO 9000 - International Organization for Standardization 9000. Compêndio Amazônico: Noções Sobre Meio Ambiente, 24–27. https://doi.org/10.22533/at.ed.1272122036

Parady, G., Ory, D., & Walker, J. (2021). The overreliance on statistical goodness-of-fit and under-reliance on model validation in discrete choice models: A review of validation practices in the transportation academic literature. Journal of Choice Modelling, 38, 100257. https://doi.org/10.1016/j.jocm.2020.100257

Sepehrvand, N., Alemayehu, W., Dyck, G. J. B., Dyck, J. R. B., Anderson, T., Howlett, J., Paterson, I., McAlister, F. A., & Ezekowitz, J. A. (2019). External validation of the H 2 F-PEF model in diagnosing patients with heart failure and preserved ejection fraction. Circulation,

This work is licensed under a Creative Commons Attribution-Non-Commercial 4.0 International License

139(20), 2377–2379. https://doi.org/10.1161/circulationaha.118.038594

Shifraw, T., et al. (2016). Community-based health insurance and the health of informal workers: Empirical findings from Addis Ababa, Ethiopia. Health Economics Review, 6(1), 1-10. DOI: 10.1186/s13561-016-0100-4

Siseho, G. M., Mathole, T., & Jackson, D. (2022). Monitoring Healthcare improvement for mothers and Newborns: A quantitative review of WHO/UNICEF/UNFPA standards using every mother every newborn assessment tools. Frontiers in Pediatrics. https://doi.org/10.3389/fped.2022.959482

UNICEF, Maternity Worldwide. (2017, June 11). The three delays model and our integrated approach. https://www.maternityworldwide.org/what-we-do/three-delays-model/

UNICEF. (2021). Maternal mortality. https://data.unicef.org/topic/maternal-health/maternal-mortality

World Health Organization. (2017). Implementation of the ANC guideline and recommendations: introducing the 2017 WHO ANC model. https://www.ncbi.nlm.nih.gov/books/NBK409109/

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