



Development of effective messages to promote maternal immunization in Kenya



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ABSTRACT

Objectives: This study evaluated messages and communication approaches for maternal immunization uptake in Kenya. We identified persuasive communication aspects that would inform maternal immunization attitudes, intent, and vaccine uptake.

Methods: We conducted a two-phased mixed methods study with pregnant women and their male partners in three regions of Kenya. Discussions were conducted in English and Swahili languages by trained focus group moderators. Baseline measures included a survey and discussions about potential messages and accompanying visuals. Follow-up focus groups with the same participants included a survey about previously discussed messages, visuals, and communication impressions. The second round of focus groups focused on message preferences developed from the first round, along with rank order discussion for final message selection. Following transcription of focus group discussions, we conducted analyses using NVivo software. Quantitative data analyses included frequencies, factor analyses, reliability assessment, regression modeling, and comparative assessment of rank order.

Results: The sample (N = 118) included pregnant women (n = 91) and their partners (n = 27) from diverse Kenyan regions (Bondo/Lwak/Siaya, Mombasa, and Nairobi). A four-factor solution resulted from factor analyses that included subscales “positive ad attitudes” (n = 5 items, $\alpha = 0.82$), “negative ad attitudes” (n = 4 items, $\alpha = 0.75$), “ad indifference” (n = 2 items, $\alpha = 0.52$), and “ad motivation” (n = 4 items, $\alpha = 0.71$). Overall, the positive ad attitudes factor ($\beta = 0.61$, $p = 0.03$) was the only significant component in the overall model examining message selections ($\chi^2_{(6)} = 262.87$, $p = 0.17$). Among the tested concepts, we found that source and situational cues had a strong influence on women’s attitude formation and intention to obtain recommended maternal vaccinations. With self-acknowledged variations in knowledge,

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participants were particularly attuned to images of relatable women, providers, and depictions in realistic or actual Kenyan clinical settings.

Conclusions: The results indicated that positive attitudes were shaped by incorporating highly relatable factors in messages. Implications for subsequent campaigns and research directions are discussed.

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1. Introduction & background

Maternal immunizations, including tetanus toxoid, influenza and pertussis vaccines, offer some of the most effective protection against morbidity and mortality in both pregnant women and young infants [1]. The promise to confer additional protection to young infants via maternal immunization is bolstered as new vaccine candidates are being identified, field and clinic strategies are being improved to improve vaccine access and uptake, and behavioral-communication research findings are implemented [1,2]. However, expansion of maternal immunization coverage requires broad acceptance by pregnant women, spouses/significant others, family members and their healthcare providers. Attendance to communication best practices is therefore critical to achieve public health objectives of widespread immunization coverage.

Kenya has been an early adopter of new vaccines, being the first large African country to successfully introduce the pneumococcal conjugate vaccine for routine use in infants [3]. Yet, Kenya continues to contend with challenges that threaten previous gains made in immunization coverage, with noted drops in recent coverage across its regions over the past decade [3]. Most recent tetanus toxoid (TT2+) coverage in Kenya was reported as 55.0% [4]. Moreover, only 57.6% of women receive the recommended four antenatal care visits (ANC) prior to delivery (2014 estimate) [5].

One effective approach to achieve and maintain high vaccine coverage is empowering providers to engage in effective communication during patient interactions. Such a strategy builds upon patient knowledge, fosters positive messages, and provides a trusted source for women to confide in during maternal and child health visits [6]. Quantitative surveys, and, to a lesser degree, qualitative studies, have contributed knowledge to address current issues regarding maternal immunization uptake in high-income settings [7]. Since the 1970s, the World Health Organization (WHO) has recommended tetanus toxoid immunization with a more recent addition of seasonal influenza recommendation for all pregnant women [8,9]. We conducted this study in the context of consideration of an additional expansion in vaccine recommendations within lower- and middle-income countries such as Kenya (i.e., pertussis) [9,10]. Yet, there is a dearth of research in low- and middle-income countries on how to message information to women (and their families) on the importance of maternal immunization [11,12]. Conducting this study in Kenya provides a unique opportunity to conduct message framing assessments across antenatal care facilities.

2. Conceptual dimensions

Persuasive communication theory suggests that attitudes and beliefs are influenced by the interplay of variables when the audience (recipient) evaluates a message and source within a specific context [13–16]. The Elaboration Likelihood Model (ELM) focuses on the relationship of motivational attributes (e.g., issue-relevance) to resulting health behaviour [17,18]. Application of the ELM model would suggest that those targeted by maternal immunization recommendations would evaluate the argument,

source, and relevance of the health concern [19]. For example, persuasion theory posits that a high degree of cognitive engagement (i.e., “high involvement” processing) would theoretically sustain counter persuasion efforts (e.g., friends and family’s negative reactions to vaccination).

The purpose of this study was to understand what persuasive influences could be identified and combined to promote maternal immunization in Kenya. Because the decision to obtain tetanus or future influenza vaccination during pregnancy may be promoted by factors aligned with the conceptual pathways such as message content, issue relevance, and source and situational cues (i.e., heuristics), this study investigates how the operation of these sets of characteristics within specific geographic locales promote country immunization goals. Our study explored the following questions:

1. What source and situational cues are most resonant?
2. What elements promote issue-relevant thinking on maternal immunization?
3. What attitudinal components comprise a persuasive message?

3. Methods

3.1. Study recruitment

Pregnant women and their male partners were recruited in four maternal clinics of the county/district level hospitals. Research staff conducted recruitment screening to gather preliminary information on screening criteria (e.g., pregnancy status, over age 18 years, hospital/clinic patient). At the outset of recruitment, we sought to enroll those persons who were willing to return for the follow up session and whose schedule would accommodate this enrollment criteria. Therefore, we enrolled only those who were 100% willing to return within a few days for the follow up discussions. Male recruitment criteria included: 1) referral by confirmed female, pregnant partner, 2) male by birth; 3) age 18 years or older, and 4) able to converse and read in Swahili, Luo, Gikuyu, Borana, and/or English. Research staff, trained in qualitative research methods, presented detailed information about the study, and subsequently allowed for questions and answers about their participation prior to obtaining written informed consent.

Pregnant women coming for antenatal care (ANC) at the maternal and child health (MCH) clinics at the study facilities were approached for study participation. We shared more details on the study with women who were willing to be part of the focus group discussions (FGDs). Given our concerns about ensuring inclusion of all willing and eligible participants, we did not exclude persons based on any literacy assessment during screening, as we had native speakers available to guide participants’ informed consent process and conversational/survey understanding at each step of our recruitment and data collection process. Focus groups were led by one English speaker, and two translators for the native languages of the region, who led the conversations. As participants were recruited at their care facilities, we offered refreshments

and snacks to those who were willing to participate in any aspect of the study. No other compensation for involvement was offered.

A subset of randomly selected pregnant women were also approached to share study information with their spouses. Study staff contacted male participants who expressed interest in participating and shared information about the study. All appointments for both male and female focus group discussions were scheduled within one week from the time of first contact with the potential participants. Details on place and time of the discussions were shared in advance before the actual interview date. On the day of the discussion, participants were taken through the informed consent process and orientated on FGD procedures prior to initiation of the discussions.

3.2. Study design

We conducted FGDs in diverse geographic areas in Kenya. We engaged in a sequential rapid research process with 12 FGDs conducted within two weeks, including concept revision/turnaround in “real time” with a graphic designer, and production and testing of Round 2 concepts within each region. Focus groups were organized by gender and residential region/district; we included 8–15 persons per group. Male focus groups were conducted separately from women’s groups. A focus group discussion guide that explored current vaccine recommendations (i.e., influenza) was developed for women’s and men’s groups based on observational data, literature review, and formative phase data. The literature review was conducted internally to develop our protocol and instrument development. We included keywords that allowed us to obtain published studies on maternal immunization, vaccine messaging, vaccine communication, and improving uptake and coverage in low- and middle-income countries. In our formative phase, we conducted interviews with pregnant women and their providers, and covered topics including resources for vaccine delivery, experiences with patient education, knowledge of vaccines, and strategies for demand creation. This study was approved by the Institutional Review Boards at Emory University, U.S. CDC, and the Kenya Medical Research Institute.

3.3. Setting and population

All data were collected in four hospital/health centers that represent three geographically distinct locations in country [Table 1]: Nairobi City County, Mombasa County, and Siaya County.

3.4. Data collection

We developed five message concepts (Fig. 1) that were presented in two rounds of testing with an accompanying questionnaire/survey. The selected images for consideration were presented separately (Fig. 2) with subsequent presentation of pos-

sible accompanying taglines presented after images were evaluated. The participants were then asked what taglines they would match to the images. Moderator guides were developed on the following topics: (a) knowledge of maternal vaccines, (b) concerns and issues about maternal immunization; (c) immunization receipt rationale (d) immunization messages and communication campaigns; (e) provider-patient communication experiences; (f) thoughts about potential taglines; and (g) thoughts about potential images.

Verbal informed consent was obtained prior to the start of each FGD. FGDs were conducted in English, Kiswahili, and/or Dholuo. Discussions were audio recorded, and transcribed verbatim. All digital recordings were destroyed following team-based quality assurance review processes to ensure that transcripts were accurate and complete narratives of actual language expressed by participants.

4. Analyses

4.1. Quantitative survey/message appraisal assessment

Prior to the start of the first focus groups (Round 1), and before participants saw potential images and taglines for the concepts, they were asked to complete baseline surveys; in the second focus groups (Round 2), we administered the survey near the completion of the discussions after revised concepts were reviewed by participants. The assessment also included reference to the current recommendations (“this ad makes me want to get a flu shot”), yet all other items were nonspecific to any recommended vaccine. We conducted rank ordering assessment across sites to determine which message (i.e., ad concept) was viewed most favorably by the participants. We sought to associate the resonant factors (e.g., source characteristics) with each concept. The message resonance scale items were developed based on previous quantitative and qualitative research findings, literature review, and maternal immunization public health and clinical experience [11,12,20–22]. Qualitative research focusing on maternal immunization issues among Kenyan women were content-analyzed to form the basis of questions regarding attitude formation. A team of clinicians, psychometricians, and behavioral researchers reviewed the instrument for adequacy of the measures.

4.2. Scale measures

The following briefly describes each message resonance domain. The items used the summative response format, a 5-point Likert scale (1-strongly agree to 5-strongly disagree), to assign meaningful values to an underlying continuum of ratings [23].

Table 1
Site and clinic characteristics.

Site	Site characteristics	Clinic/Hospital	Clinic/Hospital Characteristics
Nairobi	Kenya’s capital. Urban setting.	Mbagathi District Hospital Tabitha Clinic: Kibera	Clinical bed capacity of 350. Patient volume: average of 500 pregnant women per month. Specialty areas: Maternal health and HIV care. Clinical capacity of 20,000 patients/year.
Mombasa	Urban coastal setting, located in the southeastern coast of Kenya.	Coast General Provincial Hospital	Clinical capacity of 672 beds. Specialty areas: Maternal and child health clinic and hospital.
Siaya county	Rural setting. Siaya is a rural county in Western Kenya.	Siaya County Referral Hospital/ Centre for Global Health Research at KEMRI Kisumu Field Station	Clinical capacity of 200 beds. Specialty areas: Maternal health and HIV care.



1. You know what's best
2. Moms Protect. Vaccines Protect.
3. Strong Mom. Strong Baby. Vaccinate
4. My job is to protect you.
5. Pregnant? Protect your baby now.
6. Pregnant? Ask me about vaccines for you and your baby
7. Safe for you and your baby.
8. Safe for you. Safe for your baby.
9. Expecting? Vaccinate & Give Life.
10. Vaccinate. Ensure a happy life for your child.
11. Pregnant? Start protecting your baby now.
12. Vaccinate Today. Protect Tomorrow.
13. Protect You & Your Baby
14. Love your baby belly. Protect your baby. Vaccinate Today.
15. Vaccines + Mom =Protection

Fig. 1. Phase I Message Testing Messages and Graphic Concepts.

Positive Ad Attitudes ($n = 5$). Much of the literature has focused on the importance of the attitudinal domain for high involvement processing, looking at factors like how positive attitudes are formed from heuristic elements and related affective effects. These items measured the extent of positivity associated with viewing the ads in terms of the good feelings associated with each one [24].

Negative Ad Attitudes ($n = 4$). Participants were asked if they disliked the ad, had little interest in viewing them, were tired of viewing ads similar to that presented, and if it was forgettable.

Ad Motivation ($n = 4$). Items presented assessed the engagement with the ad, particularly those related to increased intentions to obtain vaccinations in the future.

Ad Indifference ($n = 2$). Two items were included that directly assessed the extent to which individuals were dismissive and disinterested in the ads presented.

4.3. Statistical analysis

An exploratory factor analysis with varimax rotation was conducted with 15 items. Factor loadings identified cognitive domains, low item communalities, and facets that could be enhanced in future iterations. Reliability estimates were obtained for all message resonance factors. We determined that a Cronbach alpha reli-

“Logo” Concept



Message Preferences:

Version A. Vaccinate. Ensure a happy life for your child.

Version B. Vaccinate Today. Protect Tomorrow.

“Provider” Concept

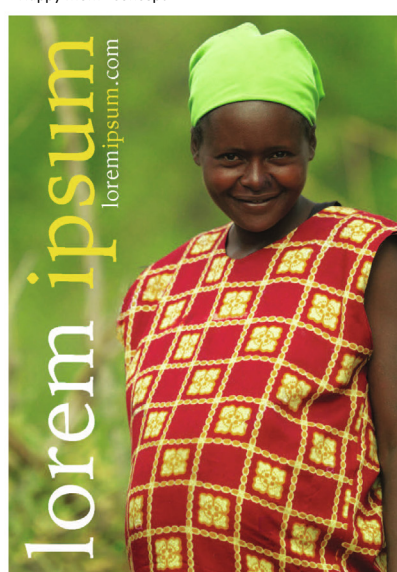


Message Preferences:

Version A. Pregnant? Ask me about vaccines for you and your baby.

Version B. Pregnant? Protect your baby now.

“Happy Mom” Concept



Message Preferences:

Version A. Safe for you. Safe for your baby.

Version B. Safe for you and your baby.

Fig. 2. Final Message/Concept Selections.

ability estimate of ≥ 0.70 would support reliability of each subscale [25–28].

Bivariate correlations were computed for all indicators as a first step in factor structure validity. This study included regression modeling to establish the components of the factors by estimating the strength of the relationships between indicators and constructs with responses from all participants (pre/post) that did not contain any missing outcome data (i.e., message preferences) [29].

4.4. Qualitative assessment

We performed an iterative process of structural coding that utilized the interview guide and subsequent additional codes developed via review of transcripts. After finalization of the preliminary codebook, three transcripts representing different sites were selected and coded by the two-member coding team. All interview transcripts were coded using NVivo 11 Pro (QSR International Pty Ltd, Victoria, Australia), by a team of four research assistants. Inductive thematic analysis of the coded tran-

scripts was performed by the coding team and senior investigators. This process led to the final identification of key emergent themes.

4.5. Coding scheme development

Our coding scheme was developed to understand how potential communication campaigns and providers would persuasively communicate with pregnant women and their spouses about maternal immunization. We evaluated narratives from focus groups to assess message content (appeal type, argument quality, language), issue relevance (tetanus, influenza, risk perception), source and situational cues (clinic, ministry of health), intended audience/recipient (community, age), and communication channels (e.g., print, mass media, internet, other). These coding categories were operationalized according to the conceptual framework with sub-themes developed based on the available literature documenting motivational factors influencing maternal immunization [30–32].

Our coding scheme was drawn from the literature, which offers some indication of the motivational messages that may encourage immunization as it may be applied to campaign appeal language

[33–35]. Through this review, we developed categorical appeal variables to assess differences in linguistic approaches including taglines and general argument quality (declarative versus inquiry-oriented). Taglines are an important part of communicating an organization's purpose in a targeted, memorable way, and are commonly used in advertisements, commercials or films, and on websites [36–39]. Our coding accounted for argument quality which is theorized to generate motivation to attend to message. Notably, the inquiring form (active process) is thought to promote greater cognitive response for message assessment [17].

Inter-coder reliability was assessed using NVivo 11 Pro (QSR International Pty Ltd, Victoria, Australia), after which inconsistencies in coding were resolved and the codebook was revised to accommodate further emergent themes. After several iterations of this process, the codebook was finalized with inter-coder reliability at kappa > 0.8 on 10% of transcripts representing all sites.

5. Results

5.1. Participants

The participants included 91 women and 27 men (Table 2). The majority of participants came from Nairobi (n = 55, 36%). Most women were in their late 20 s/early 30 s (mean age: 27.7 years, SD = 5.8), were married (n = 79, 87%) and had <2 reported lifetime pregnancies (n = 54, 59%). Those who participated in the focus groups generally were in the second or early third of their trimesters (mean = 4.8 mos, SD = 1.9 mos). The age of male participants had more variability (SD = 9.7 years) with a mean age of 34.2 years. Most men also resided in Nairobi (n = 19, 70%) and were business owners (n = 12, 55%), informal and service workers (n = 8, 36%), or were salaried employees (n = 3, 14%).

5.2. Reliability analysis

Determining the reliability of subscales is important to ensure that items are measuring the intended construct. The results indicated that, with the exception of “ad indifference” (Cronbach's $\alpha = 0.52$), the reliabilities of the initial subscales had moderate to high internal consistency (Cronbach's $\alpha = 0.71$ – 0.82) (Table 3). Assessment of the “positive ad attitudes” (n = 5 items) resulted in the highest level of internal consistency among subscales (Cronbach's $\alpha = 0.82$) likely due to having more items similarly measuring the same underlying construct. Thus, the specific questions reflect a strong relationship to the underlying constructs assessed (e.g., survey items gauged how positive participants felt about the messages/ads or “positive ad attitudes”). Table 4.

5.3. Measurement model testing

Bivariate correlations were computed for factor structure validity from a resulting 4-factor solution that explained 61% of overall variance. A subsequent check of factor correlations validated the unidimensionality of each domain. Correlations of the four factors' composite scores indicated that multicollinearity was not a concern for individual items or the factor structure with the intercorrelation threshold set at ≥ 0.85 [40]. Factor analysis results support the validity of the constructs. Loadings were consistent with most items in the range of ≥ 0.48 to ≤ 0.86 . Overall, the positive ad attitudes factor ($\beta = 0.61$, $p = 0.03$) was the only significant component in the overall regression model examining message selections ($\chi^2_{(6)} = 262.87$, $p = 0.17$).

Table 2

Focus group participant characteristics by sex (N = 118).

Variable (n or mean \pm SD)	Pregnant women (n = 91)	Male Partners (n = 27)
Age (years)	27.7 \pm 5.8	34.2 \pm 9.7
Site		
Bondo/Lwak/Siaya	19	4
Mombasa	26	4
Nairobi	36	19
Unknown	10	0
Marital Status		
Married/Cohabiting	79	26
Single/Separated	12	1
Mother tongue		
Luyha	15	3
Luo	33	19
Swahili	2	0
Other	41	5
Religion		
Traditional African	18	14
Catholic	18	5
Muslim	10	2
Christian/protestant	42	5
No religion	3	1
Occupation		
Housewife	19	0
Service (cleaning, cooking, driving, etc.)	25	5
Education (teachers, students)	8	0
Business Owner	21	12
Salaried Employee	17	3
Informal worker (jua kali, hawker, etc.)	1	7
Number of pregnancies		
1	31	–
2	23	–
3	19	–
4	10	–
5 or more	8	–
Gestational age (months)	4.8 \pm 1.9	–

5.4. Qualitative findings

5.4.1. Summary of findings

Overall, participants in the focus groups were very aware of recommended vaccines in their country (i.e., polio), yet held a moderate amount of knowledge related to maternal vaccine recommendations (i.e., Tdap). Several concerns and issues about maternal immunization were raised including those related to side effects and vaccine safety. Those in our study also provided various reasons why they received previous immunizations, yet disease protection was a fundamental motivator. We found that immunization messages and communication campaigns were largely perceived as ineffective by participants as they broadly targeted the populations without consideration of regional attitudes and health practices. Overall, participants were positive in their assessment of provider-patient communication experiences and expressed appreciation for healthcare providers' willingness to consider and discuss concerns about vaccines during clinical encounters. Finally, we found that there was overall embracement of a few images and taglines from the broader selection set without much variation across districts in preferences; some variation occurred in the final potential matching of images with taglines based on region (i.e., Siaya/Kisumu participants preferred “Happy Mom” with “Safe for you and your baby” compared to Nairobi participants who preferred the “Provider” image with “Pregnant? Ask me about vaccines for you and your baby” tagline language).

5.4.2. Depict clinical encounters to surmount knowledge variation

In the discussions, we learned that there is a perception that urban women are more informed than rural women about mater-

Table 3

Description of facilities and focus group/survey activities conducted by study site.

Table 3. Message Resonance Internal Consistency Measures (N = 150)				
	Positive Ad Attitudes	Negative Ad Attitudes	Ad Motivation	Ad Indifference
Items (n)	5	4	4	2
Observations (%)	150 (100)	150 (100)	150 (100)	150 (100)
Cronbach's α	0.82	0.75	0.68	0.50
Cronbach's Standardized α	0.82	0.75	0.71	0.52
Item Mean	1.66	4.13	1.71	4.18
Item Variance	0.02	0.03	0.10	0.02
Scale Mean	8.28	16.51	6.83	8.37
Scale Variance	12.94	13.31	9.23	3.60
Scale SD	3.60	3.65	3.04	1.90
Scale ANOVA	$F_{(4,149)} = 7.70, p < 0.01$	$F_{(3,149)} = 5.39, p < 0.01$	$F_{(3,149)} = 20.25, p < 0.01$	$F_{(1,149)} = 2.70, p < 0.10$

Table 4

Descriptive statistics for four factor scales, factor loadings, alpha reliability estimates, and subscale items (N = 150).

Factor	Mean	SD	Min	Max	Factor Loading
<i>Positive Ad Attitudes scale</i> ($\alpha = 0.823$)					
1. This ad makes me feel good.	1.44	0.79	1.00	5.00	0.65
2. This is a wonderful ad.	1.55	0.82	1.00	5.00	0.58
3. This is a fascinating ad.	1.82	1.08	1.00	5.00	0.59
4. This ad is in good taste.	1.71	0.97	1.00	5.00	0.51
5. This ad is exciting to me.	1.76	1.04	1.00	5.00	0.60
<i>Ad Indifference scale</i> ($\alpha = 0.515$)					
1. This ad leaves me cold.	4.27	0.99	1.00	5.00	0.67
2. This ad is not worth looking at.	4.09	1.31	1.00	5.00	0.67
<i>Negative Ad Attitudes</i> ($\alpha = 0.753$)					
1. This ad has little interest for me.	3.95	1.27	1.00	5.00	0.55
2. I dislike this ad.	4.22	1.20	1.00	5.00	0.48
3. This is the kind of ad you forget easily.	4.01	1.19	1.00	5.00	0.72
4. I'm tired of this kind of advertising.	4.32	1.16	1.00	5.00	0.55
<i>Ad Motivation scale</i> ($\alpha = 0.71$)					
1. This ad is very appealing to me.	1.53	0.83	1.00	5.00	0.55
2. This is a heart-warming ad.	1.81	1.13	1.00	5.00	0.57
3. This ad makes me want to get a flu shot.	2.10	1.38	1.00	5.00	0.44
4. This ad is important to me.	1.39	0.80	1.00	5.00	0.59

nal immunizations. Participants, including those at private facilities where it is more likely to be available, expressed little familiarity with influenza vaccine. Reading level and interpretation of provider recommendations can therefore be a challenge. A female participant explained:

“There are some women who do not know how to read. For example, the woman on the picture might be from Turkana community and she most likely does not know how to read. The healthcare provider should therefore use the picture to educate them while probing to get to know what the women are seeing on the image. The women will be able to see themselves and the healthcare provider on the image.” – women round 1, Mbagathi, Nairobi

In viewing the ad concepts, others offered that image relatability was a key feature sought by both male and female participants for any immunization campaigns or vaccine promotion materials. This was tied to issues of gender and culture. Participants reinforced their positive appraisal of the healthcare encounter ad concept based on heuristic assessment of the female patient, the provider stance, as well as environmental cues:

“We can also relate with it. The health worker is sitting on a stool and the mother is sitting on something like a bench. It is

not an executive chair. We can relate with it in our setting.” – women round 1, Mbagathi, Nairobi

“About hospitals and schools, I think you can just have different versions of the woman. You can have the woman on the picture, a student and modern working-class woman on the same picture. The picture will then be used to educate people in very many settings... The question here is how the image will appeal to that particular crowd. Do not make an image for a specific crowd since it might not be noticed by other people.” – women round 2, Mbagathi, Nairobi

5.4.3. Husbands, male partners, and dyadic portrayals

Although both men and women described maternal health and children's healthcare as the mother's responsibility, men in our focus groups expressed a desire for involvement in antenatal care and representation in ads and future messages. The men in our focus group ranked female-only portrayals in the ads slightly below females, as they needed to also see themselves in the dynamic representation. A focus group participant gave his input on the rationale for including men in any advertisements or future health promotion messaging:

“A man should be there for his pregnant wife at all times. From the day you both know about the pregnancy, the man accompa-

nies woman throughout the pregnancy. They go to clinic together up to the last day. Although the husband is not physically pregnant, he is emotionally and mentally expectant. In fact, he is expecting in his mind and emotions. That is my take.” -men round 2, Tabitha

Another added why the clinical portrayals lacked resonance:

“It could be better if the husband of the woman is also added next to the woman to show husbands that it is important to accompany a wife to the clinic during pregnancy.” -men round 2, Tabitha

5.4.4. Cultural cues and language enhance or detract

Participants were quick to draw attention to aspects of the materials that did not resonate with them culturally. This was especially true of urban residents, who may not relate to imagery evoking traditional or rural cultural cues. In particular, the image of a woman carrying a panga (machete) was considered unrelated that “left them cold” and unwilling to even pay attention to the ad (notably a factor with lowest Cronbach’s alpha on quantitative assessment). One man offered:

“From where we started, I recall the woman holding a *panga* and the baby picture. I advise that those taking these photos should use backgrounds to cover a particular set up where the concepts will be used. For example, the woman holding a panga picture, I understood it but there are people who may not understand it. In my local set up, it is difficult to understand. The pictures should presuppose the intended environment, culture and geographical coverage. *Let the picture relate to our communities and culture not other people’s culture.*” -men round 2, Siaya

Language was another issue that was highlighted as a potential reason why women may not pay attention to maternal immunization messages in the future. A woman stated:

“There is nothing there in terms of vaccination. It is just a woman with a panga whom we are not sure is pregnant. . . The picture itself is nice. . . it is beautiful and African. In terms of conveying a message, it does not convey any message on vaccination or health. . . If it is related to a pregnancy or protection, the nature of protection is scary.” - women round 1, Siaya

5.4.5. Final assessments

Each of the concepts was appraised on overall elements by both men and women across all country sites. Following the first round selection process of participants’ top 3 images and corresponding top 3 taglines that could be used in future message development and campaigns, we focused on the rationale informing their decision of these choices and how best to combine the visuals with selected tagline (narrative) to inform future messages. Overall, the females preferred the “logo” option followed by “the doctor” and the “happy mom.” Men prioritized the “the doctor” and the “happy mom”. About the “logo” option, a woman offered why it captured her attention and what cues made it relatable:

“The syringe. It is scary but real. It lets you know what you are going to do at the hospital. *The pregnant woman also captures my attention because you can relate.* If I am not pregnant, I will just look at it and walk away but as a pregnant woman, I will see a pregnant woman there and the syringe. I will see the syringe first, then the pregnant woman.” -women round 2, Mbagathi

With respect to the “doctor” ad, another woman suggested that the normalization of maternal immunization within the span of many clinical encounters held appeal. It made the topic relatable and approachable.

“This woman looks like one who is on normal medication. It is both positive and negative. According to me, it is good to ask about vaccines no matter what stage of pregnancy you are. It doesn’t matter whether the pregnancy is visible or not visible. The bit of the pregnancy not showing might be considered a put off. On the other hand, it is encouraging us to go for the vaccines as early as possible.” -women round 2, Mbagathi, Nairobi

Finally, the broad appeal of a “happy mom” likely was rooted in overall heuristic appraisal of the woman’s health and wellbeing highlighted in her smile and strength. Both men and women commented about the depiction a similar manner:

“The picture is attractive and catches attention. The mother is smiling and makes other women proud of motherhood.” - men round 2, Mombasa

“The first picture of a happy mom. The woman looks strong and seems vaccinated. She is healthy and can motivate me to get vaccinated.” -women round 2, Mombasa

Correspondingly, the items captured in the “positive ad attitudes” scale, which also directly correlated with favorable appraisal, highlighted components discussed by the participants including why “the ad makes me feel good,” why the ad presented is “wonderful,” and in “good taste,” among other attributes. This concept could evolve in the future to include vaccine-specific recommendations (i.e., add pertussis in selected tagline) and given the participant feedback, is eye-catching in a real world context suggesting placement in the broader environment (i.e., billboards, bus ads, social media).

6. Discussion and conclusions

Using mixed methods approaches with intact groups retained for two rounds of message testing, this study found key source and situational cues that are most resonant to pregnant women and their male partners. These include the presence of a “healthy pregnant woman” with normal fetal growth and maternal weight gain in the third trimester. The positive ad attitude measure was most significantly associated with presentation of this image of health and well-being to the audiences. Such affective appraisal of the message concept has previously been associated with stronger vaccination intention among pregnant women [12,41].

In addition, the depiction of clinicians and clinical encounters is also critical in garnering women’s attention to vaccine intention [22,42–44]. Notably, men in the focus groups also identified a lack of presence of males in any of the materials presented to them. To garner their engagement and involvement in promoting maternal immunization, their presence is paramount in images and overall messages [45–47]. This will bolster positive social norms around vaccination as a family issue [48,49].

With respect to the elements that promote issue-relevant thinking on maternal immunization, several aspects warrant discussion. For example, the depiction of the syringe serves as a strong heuristic that was mentioned in multiple focus groups. Such an image, while invoking self-proclaimed “fear” of its meaning according to the women, also offers them an important cue for action and sets up the behavioral expectation of a forthcoming clinical visit [50]. The symbol resonates as an important contemplative cultural cue even in places where reading ability is limited [51].

Another important aspect of our findings is that attitudes are shaped by forces as straightforward as showing pregnant women in “natural settings” such as an outdoor clinical space in resource limited areas (e.g., image of the patient-provider interaction). As ELM posits that enduring behavioral change likely is initiated via central route processing, our findings reveal that in other contexts,

heuristic cueing through visuals may be a first step in capturing the attention of those not typically targeted for health messages [11,52]. Cultural subtleties such as clothing, language, and even husbands, family, and tribal members may send important cues to the recipient to pay attention to the message presented [36]. By placing familiar visuals of known objects, similar people, or symbols along with immunization “calls to action” narrative (i.e., taglines) in communication, viewers may be able to make quick health decisions. This is important as heuristic cueing underscores the relatability of the message presented and elevates the resonance of the message.

Finally, our study offers additional evidence for the development of subsequent campaigns underscored by the need for ongoing dialogue among patients, communities, and medical and public health officials. Among the best practices emerging from this study, we offer that effective message development includes the opinions and perspectives of those targeted by public health communication campaigns to ensure that messages are appropriate and resonant given sociodemographic, geographic, and sociocultural considerations. The findings also suggest that additional message channel and media consumption research would be highly beneficial to understand how similar target audiences receive messages and respond to the immunization call to action. Given the current estimates on vaccine uptake [5], we recognize that additional research may be useful to gauge additional opportunities for messaging outside of clinics, especially among women unable to travel to appointments (i.e., via social media, web-based options, and mass media).

7. Limitations

This study utilized convenience sampling and we acknowledge that persons who did not have access to one of our participating recruitment sites (i.e., clinics and health centers) may not have been represented in our sample. The resulting study sample size is relatively small and includes many participants drawn from the largest urban setting and higher-income groups. Thus, we recognize the limits to generalizability and sampling bias that may exist with our methods. Additionally, measures were self-reported and may be subject to social desirability bias, as participants may have wanted to please the research team with positive assessments. However, it is unknown if this was an actuality, as all instruments were coded with participant IDs thereby removing any personal identifying information from measurement tools.

8. Conclusion

The results indicated that positive attitudes could be formed by incorporating highly relatable factors in ad messages across Kenya by both women and men. The resulting products from this study thus have greater potential to promote appraisal of highly resonant maternal vaccine messaging about immunization during pregnancy. The promotion of evidence-based persuasive messages has broad public health implications. With greater attention paid to resonant messages, intended audiences will be motivated to act upon cues to get immunized. Ultimately, the incorporation of highly resonant messages is expected to increase recommended immunization uptake in clinical encounters and improve vaccination coverage in areas characterized by suboptimal rates.

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Disclaimer

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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