

## Impact of Channel on Message Effectiveness: A Case of Disseminated Information on Maternal Mortality in Nigeria

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**Abstract**— The primary aim of investing in information dissemination is to create enlightened citizens that are expected to make informed choices when faced with problems. While most developed countries have attained the fifth goal of MDGs by recording a substantial drop in the rate of maternal mortality, most developing countries; especially from sub-Saharan Africa cannot boast of same. Despite the huge amount spent on campaigns to curb this menace, Nigeria still records a high toll of maternal mortality. As fundamental as this problem is, there is a dearth of literature examining the inverse relationship between the investment and message effectiveness. This study examined the two popular channels of communication in Nigeria: the mass media and the interpersonal channels in relation to effective dissemination of information on maternal mortality. A survey of 380 respondents from North-Central Nigeria revealed that although the two channels are statistically significant ( $p < 0.05$ ), interpersonal communication makes the strongest unique impact on disseminated information on maternal mortality: Beta=.42, while for the mass media, Beta= .13. Both channels explain 28% of recorded success of disseminated message on maternal mortality.

**Keywords**— Mass Media; Interpersonal Communication; Maternal Mortality.

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### I. INTRODUCTION

The channel in which a piece of information is disseminated has been observed to have great impact on the effectiveness of the disseminated message. Thus, channel determination deserves all seriousness if the goal of the communication process is to be achieved. More so when the issue at stake is that of health.

Health is the central factor in determining the wealth of a nation. The health status of a community is easily discernible in its work force, economy, and generally has fundamental consequences for its sustainable development. [1] Observe that low health status has continually been of debilitating effect on the quality and quantity of human capital in African countries. To lend credence to this observation, [2] advances that the quality of life of the citizens of a nation as well as its socio-economic development go a long way in determining the its wealth. As rightly expressed by [1], there is no country that is immune to disease but most African countries, including Nigeria are slow in combating them.

The issue of maternal mortality took the center stage in the deliberations of the world leaders because of the danger it constitutes to development. Despite articulating a reduction in maternal mortality as the fifth of the Millennium Development Goals (MDGs), the rate is still

high in most developing countries. Nigeria according to [2] has the worse statistics relating to maternal mortality in the developing world despite the availability of inexpensive interventions for safe motherhood. The best way of creating awareness about the interventions is by utilizing an appropriate channel [3] Some of the available channels are the mass media and interpersonal communication

#### A. Effective Information Dissemination

A piece of information cannot be said to be effective if it fails to yield desired change in behavior or attitude [4]. Most developmental campaigns in Nigeria are poorly executed thereby, making the attainment of the set goals for the exercise a mirage and expenses incurred, a waste [5].

Besides, some of these campaigns obviously fail to carry the target audience along thus reflecting a top to bottom communication paradigm rather than a participatory one. The mode of information dissemination often fails to take the peculiarities of the target audience into consideration such as language proficiency, timing, level of education, etc. [6] submits that one can successfully change the world within people's nation by simply changing their hearts through provision of necessary information at the appropriate time. This argument is aptly justified by a report in [7] which gave a pictorial description of how lack of information or awareness hinders development. The report

narrated a sorry tale of a community in Kwara state that went without water for many months due to the break-off of a knot on the village bore hole which could be replaced with one naira (=N=1.00; equivalent to \$ 0.00657).

The need to embark on a deliberate study to unbar the citizens from poor health syndrome arising poor channel selection forms the fulcrum of this study.

However, one may be tempted to dismiss a study of the influence of mass media and interpersonal communication on effective dissemination of health information superfluous and retrogressive in this age of advanced technology, but as [8], espouses, meanings are in us, not in the message. It could be erroneous to assume that messages beamed to audience over the internet or other sophisticated media would generate an automatic desired impact on them [9]. To buttress this, [10] calls for 'an increasing role for the intermediary institutions in the creation and dissemination of relevant knowledge on the internet in order that the technology is used in a way that is compatible with local development goals' (p.85).

### *B. Mass Media*

This is a means of communicating to a large heterogeneous audience. The source of information largely remains anonymous to the receiver because of the nature of the medium. It is credited for setting the agenda and predetermining issues that are regarded as important in a given society and at a given time [9]. The evolution of the mass media as an instrument for promoting public health dates back to 1700s [11] It has the electronic medium; (radio, television, films, internet, etc.) and the print (newspapers, magazines, bill boards, fliers, posters, etc) in its kitty [11]. But this shall be limited to radio and television in this study. This is because of the versatility of these organs of the mass media. Although, [12] observes that the effectiveness of most agricultural information broadcast in Nigeria is marred by lack of content relevance, reach, timing and language of dissemination, the mass media is noted for strength of reach, agenda setting, mainstreaming, cultivation, [9] and for enthrone spiral of silence [13] in addition to the fact that radio and television are largely impersonal.

Many researchers have established a significant relationship between utilization of the mass media to create awareness about developmental issues and adoption or change in behavior towards the advocacy. [14 and 15] found that mass media utilization has a positive impact on knowledge level.

However, [16] reports that the involvement of the mass media in the campaign against HIV/AIDS in Nigeria yielded little result.

### *C. Interpersonal Communication*

This mode of communication is most effective in organized societies [13]. Its strength lies in its interactive nature, its use of verbal and non-verbal symbols and many sensory organs. It serves to gain information, build context of understanding, establish identity as well as to express and receive interpersonal needs.

It is often employed to give meanings to information disseminated over the mass media. [13] reports that Elisabeth Noelle-Neuman demonstrates how interpersonal

communication and media operates together in the development of public opinion. This interaction becomes so tense that it could be difficult to distinguish information obtained from the media from the one obtained from interpersonal channels (p. 342-343). Interpersonal communication was enlisted in the successful adoption of birth control methods in South Korea in 1968 (p.341) by dissemination of information through village leaders to the mothers' club leaders then it became an issue of discussion between the village women; thus considered highly effective for dissemination of innovations.

### *D. Health information and maternal mortality*

[2] says health is not limited to the absence of disease alone but extending to a complete state of physical, mental and social well-being. Therefore, health information can be regarded as messages that are related to the general well being of an individual. Sometimes used interchangeably with health communication, [17] describes the latter as 'a health education approach which attempts to change a set of behaviour in a large-scale target audience regarding a specific problem in a predefined period of time' (p.99). It is clear from the foregoing that there is an intent to enlighten, educate, and create awareness about occurrences that can endanger good health in health information. In this study however, health information is conceived as information that is related to minimizing the incidences of death of a woman while pregnant or within 42 days of delivery of the child [2] otherwise known as maternal mortality.

However, huge sums of money are usually allocated to creation of awareness about health issues in Nigeria. Notable among the health issues to which much money are committed are campaigns against HIV/AIDS, family planning, cancer, and immunization. Little mention is made of maternal mortality except as a consequence of unplanned child birth. Not only does the issue suffer regular mention by the policy makers, there is also a dearth of literature examining the inverse relationship between the investment and message effectiveness. Although there had been studies on effective information dissemination, [5], literature is bereft of studies that focus the influence channel of information dissemination on effective dissemination of health information in Nigeria. Similarly, an explorative analysis of a decade of research on health content in the media [26] betrays a 'conspiracy of silence...that surrounds the specific disease conditions from which women suffer or die' [2] as most of the articles focused on smoking/ tobacco and HIV/AIDS; 15 and 14% respectively. Only 5% focused on each of family planning/ pregnancy and crime/ violence/ injury [26]. There was no article that was dedicated to the study of maternal mortality in the analyzed publications.

On the other hand, rather than measuring the effectiveness of the disseminated information from the criteria set by the provider (2&3), [16] observe the immense contributions of obtaining patients' point of view in monitoring medical care outcomes to health care development in the past ten years.

But this study is aimed at:

1. To measure the impact of the mass media on the effectiveness of disseminated information on maternal mortality in Nigeria.

2. To measure the impact of interpersonal communication on the effectiveness of disseminated information on maternal mortality in Nigeria.
3. To determine the channel that has greater impact on the effectiveness of disseminated information on maternal mortality in Nigeria.

To achieve these objectives, the following research questions are set:

1. What is the impact of the mass media on effective dissemination of information on maternal mortality in Nigeria.
2. What is the impact of the mass media on effective dissemination of information on maternal mortality in Nigeria.
3. Which channel has greater impact on effective dissemination of information on maternal mortality in Nigeria.

## II. METHODOLOGY

### A. Population and Sample

A survey design was employed with its multistage sampling procedure. The first stage of the sampling procedure was to stratify the country into six geopolitical zones of North West, northeast, north-central, south-south, south-east and south west. Next, the north central was selected for study going by the report that the area enjoys an average educational ranking [19].

Next, Kwara state which formed the base for previous research on health communication in 1988 [17] was selected. With a population of 2,365,353, Kwara State is made up of 16 Local Government Areas which are stratified into three senatorial districts according to the Federal Government state and local government creation. The three senatorial districts are: Kwara North, Kwara Central and Kwara South. Each of the senatorial districts comprises five, four and seven local government areas respectively. Samples were drawn from these districts based on their population of Women of Child Bearing Age (WCBA).

### B. Sample size

As advanced by [18], a properly drawn sample enables a researcher to generalize her findings on the entire population of study. However, [20] advances that sample size is independent of size of the population, rather, more emphases should be placed on the sample size which determines the precision of the sample estimate rather than on the size of the population. To support this argument, a rule of thumb says a sample size of 1,000 from a population of 100,000 can have the same error of margin as with a population of one million. Upholding this thought, [21] explains that, one of the principles of sampling is: "the smaller the population, the bigger the sample ratio has to be for accurate sample" (p.171) and vice-versa. Another rule of thumb by [22] proposes that the sample size should be large enough such that, when it is divided into two groups, each group would have not less than 100 members. Further on this, he

says if sub-group analysis were to be considered, the minimum size for each sub-group should be 20 to 50. Borrowing from this submission, a systematic sample of households in the selected area was identified by including every 10<sup>th</sup> house in a row. All adults of 15 years and above (reproductive age) were included in the sample. The sample size was 500 adults. Thus, a total of 500 hundred questionnaires were distributed out of which 380 (76%) were returned. four questionnaires were not usable; hence, excluded from analysis. Consequently, 376 cases were analyzed.

### C. Response scale

The respondents were asked to rate their views about the variables under study using a five item semantic differential scale (1 =Very Much Unlike Me, to 5 = Very Much Like Me). This scale was adopted from the General Health Questionnaire (GHQ). [23]

### D. Response Bias

Bias refers to errors or inaccuracies in data collected which can emanate from the instrument, interviewer, respondents, and the situations [24]. Response bias from the instrument was controlled by rewording negatively worded items. Their scores were also reversed to eschew response bias.

### E. Questionnaire

The questionnaire contained two parts tagged part A and B. Part A was designed to obtain demographic information from the respondents while Part B contained a section to assess respondents' views about the features of the mass media and another to assess their views about the features of interpersonal channels. The mass media variable had 13 items; programming (7 items), impersonal (3 items) and content (3 items). There were also 14 items to measure the interpersonal channel dimensions: interactive (7 items), fulfilling (4) and clarity (3). Each of the items had could have a maximum score of 5 and a minimum of 1. The dimensions were aftermath of principal component analysis through varimax rotation [25]. This form of standardization became inevitable considering the fact that the items were developed from literature.

### F. Method of Analysis

The data were analyzed using both descriptive and regression analysis in SPSS version 14. Descriptive analysis gives a vivid explanation to the components of respondents' demography. Regression is often employed in channel credibility studies because it provides analysis on model fit and has more statistical strength over simple correlation (Pallant, 2001).

## III. RESULTS, DATA ANALYSIS

Table 1 reveals that 57.1% of the respondents claim to receive much information on maternal mortality from the radio while 42.9 say they receive little. It further shows that 61.6% describe the information they receive on maternal mortality from television as being little, while 38.8% report high. For the interpersonal channels, the table indicates that 38.8% of them obtain little information on maternal

mortality from members of their community while 61.6% obtain much information on maternal mortality. Those who report much information from religious groups constitute 57.1% of the respondents while 53.9% claim to receive much information from friends.

TABLE 1  
AMOUNT OF INFORMATION ON MATERNAL MORTALITY  
RECEIVED THROUGH VARIOUS CHANNELS

| Channel         | Frequency | Percentage |
|-----------------|-----------|------------|
| Radio           |           |            |
| Less            | 163       | 42.9       |
| Much            | 217       | 57.1       |
| Television      |           |            |
| Less            | 234       | 61.6       |
| Much            | 146       | 38.4       |
| Community       |           |            |
| Less            | 146       | 38.4       |
| Much            | 234       | 61.6       |
| Religious Group |           |            |
| Less            | 163       | 42.9       |
| Much            | 217       | 57.1       |
| Friends         |           |            |
| Less            | 175       | 46.1       |
| Much            | 205       | 53.9       |

Table 2 presents the correlation matrix of effective information dissemination and the independent variables. This exercise was conducted to test or multicollinearity between the variables. The output confirms that the variables are unique in their measurement as the Pearson Product Correlation (PPMC) does not reveal any intercorrelation with values of 0.7 and above [25].

TABLE 2  
CORRELATION MATRIX OF EFFECTIVE INFORMATION  
DISSEMINATION, MASS MEDIA AND INTERPERSONAL CHANNEL

|     |                     | alleid   | allic    | allmm |
|-----|---------------------|----------|----------|-------|
| EID | Pearson Correlation | 1        |          |       |
|     | Sig. (2-tailed)     |          |          |       |
|     | N                   | 376      |          |       |
| IC  | Pearson Correlation | .510(**) | 1        |       |
|     | Sig. (2-tailed)     | .000     |          |       |
|     | N                   | 376      | 376      |       |
| MM  | Pearson Correlation | .394(**) | .505(**) | 1     |
|     | Sig. (2-tailed)     | .000     | .000     |       |
|     | N                   | 376      | 376      | 376   |

\*\* Correlation is significant at the 0.01 level (2-tailed).

**Research Question1:** What is the impact of the mass media on the effectiveness of disseminated information on maternal mortality in Nigeria.

Table 3 shows that there is a significant positive relationship between effective dissemination of information on maternal mortality and the mass media.

Test statistic: PPMC= 0.394

Level of significance  $p < 0.01$

Remark:  $H_1$  is significant, hence,  $H_0$  is rejected.

TABLE 3  
REGRESSION ANALYSIS OF DEPENDENT AND INDEPENDENT  
VARIABLES

| Model |            | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|------------|-----------------------------|------------|---------------------------|--------|------|
|       |            | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant) | 46.744                      | 3.090      |                           | 15.126 | .000 |
|       | IC         | .457                        | .056       | .417                      | 8.218  | .000 |
|       | Mass M.    | .259                        | .072       | .183                      | 3.613  | .000 |

a. e id

To measure the impact of mass media on the effectiveness of disseminated information on maternal mortality in Nigeria, the study proceeded with linear regression (shown in table 4), as one of the inferential statistical tools for measuring impact of independent variable on the dependent variable [25]. In this study, the analysis revealed that there is a statistically significance impact of mass media on the disseminated information on maternal mortality. The statistical equation to this conclusion can be written as ( $t = 3.613$ ,  $P < 0.01$ ). From this equation one can vividly induce that the mass media has a very strong impact on disseminated information on maternal maternity.

**Research Question 2:** what is the impact of interpersonal communication on the effectiveness of disseminated information on maternal mortality in Nigeria?

Table 3 establishes the relationship between effective dissemination of information on maternal mortality and interpersonal channels of communication. It shows that a positive relationship exists between the two variables. The Test statistic: PPMC is 0.510,

Level of significance  $P < 0.01$ ,

Remark:  $H_1$  is significant, thus,  $H_0$  is rejected.

Linear regression as presented in table 4 was also used to study the impact of interpersonal communication on the effectiveness of disseminated information on maternal mortality. The result of the regression shows that there is a statistically significant impact of interpersonal channel on the effectiveness of the information disseminated. The statistical equation is written as ( $t = 8.218$ ,  $p < 0.01$ ). Thus, it can be inferred that interpersonal communication has a strong impact on the effectiveness of the information on maternal mortality in Nigeria. This analysis answers the study second research question appropriately.

**Research Question 3:** Which of the channels has greater impact on the effectiveness of disseminated information on maternal mortality in Nigeria?

To determine the channel that has the greater impact on the effectiveness of disseminated information on maternal mortality in Nigeria, the beta value was considered. Although table 5 shows that both mass media and interpersonal communication variables have meaningful

impacts on the effectiveness of the disseminated information on maternal mortality. Both determine the effectiveness of the disseminated message on maternal mortality by 28.5%, at significant level  $p < 0.01$ .

TABLE 4  
REGRESSION MODEL OF EID AND THE INDEPENDENT VARIABLES

| Model | R       | R Square | Adjusted R Square | Std. Error of the Estimate | Sig. F Change |
|-------|---------|----------|-------------------|----------------------------|---------------|
| 1     | .534(a) | .285     | .281              | 11.286                     | .000          |

a Predictors: (Constant), MM, IC

b Dependent Variable: EID

However, it is necessary to provide answer to the third research question which is to determine the channel with the greater impact. The statistical way of revealing the level of the impact on effectiveness of information on maternal mortality is by comparing the Beta values of the two variables [25]. The Beta value for Interpersonal communication is 0.417 while the Beta value for mass media is 0.183. This shows that the interpersonal communication has a unique and higher impact on the effectiveness of maternal mortality information in Nigeria, over the mass media variable.

A further explorations of the independent variables by dimensions shows that the impersonal feature and the content of the mass media have no significant impact on the effective dissemination of information on maternal mortality;  $P > 0.05$ . similarly, the clarity feature also does not have a significant impact on effective dissemination of information on maternal mortality:  $P > 0.05$  as presented in table 5.

TABLE 5  
REGRESSION ANALYSIS OF EFFECTIVE INFORMATION DISSEMINATION AND DIMENSIONS OF MASS MEDIA AND INTERPERSONAL CHANNEL.

| Model |             | Unstandardized Coefficients |            | Standardized Coefficients | T      | Sig. |
|-------|-------------|-----------------------------|------------|---------------------------|--------|------|
|       |             | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)  | 45.994                      | 3.126      |                           | 14.712 | .000 |
|       | Prog.       | 2.527                       | .685       | .182                      | 3.690  | .000 |
|       | impersonal  | .546                        | .594       | .048                      | .920   | .358 |
|       | content     | .608                        | .559       | .052                      | 1.086  | .278 |
|       | interactive | 4.190                       | .847       | .304                      | 4.947  | .000 |
|       | fulfilling  | 1.785                       | .760       | .142                      | 2.350  | .019 |
|       | clarity     | .070                        | .674       | .006                      | .104   | .917 |

a Dependent Variable: eid

#### IV. DISCUSSION

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The study showed that both channels of communication; the mass media and interpersonal communication contribute significantly to the effectiveness of the disseminated message on maternal mortality. However, the analysis of the respondents by the volume of information on maternal mortality that they receive from the various channels reveals that the respondents do not receive much information on maternal mortality from the mass media as they do from the interpersonal channels. Of the two categories of the mass media examined (radio and television) the radio seem to perform better with 57% of the respondents admitting that it offers them much information on maternal mortality while 61.6% of them attest that the television offers them little information. Whereas, more than half of the respondents admit that all the interpersonal channels examined (community, religious group and friends) offer them much information on maternal mortality. This assertion is further corroborated by the analysis of the regression slope which indicates  $\beta = 0.183$  for the mass media and  $\beta = 0.417$  for the interpersonal channel.

#### V. IMPLICATION AND CONCLUSIONS

The implication of this finding is that maternal mortality does not enjoy its pride of place in health discourse [26]. The government and other stake holders donot give the deserving attention to the issue of maternal mortality in Nigeria as they do other health matters. Given the high level of media consumption by the respondents, the mass media would have been a veritable tool to enlighten them on the risks attached to negligence of certain things during pregnancy. This would certainly go a long way in creating informed citizens. As explained by [13], a mutually strengthening relationship exists between the mass media and the interpersonal channel to the extent that when the mass media is maximally utilized, its benefit will reflect on the interpersonal channels. Based on these findings, the following recommendations are made: the policy makers should create more awareness on maternal mortality through the mass media. Special programmes in local languages should be dedicated to the issue in all broadcast stations in the country. The programmes should be as interactive as possible to give all participants a sense of active involvement. The strength of television's audio-visual should be tapped to intensify adoption of disseminated messages. More awareness should be created through open-air campaigns, workshops and seminars involving the local individuals. Communicators must exercise caution in the use of interpersonal channels to minimize interruptions and crowded talks if the communication transaction must yield desired objectives,

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