
ORIGINAL ARTICLE**ASSESSMENT OF PRODUCTION AND DISTRIBUTION OF PRINTED INFORMATION EDUCATION COMMUNICATION (IEC) MATERIALS IN ETHIOPIA AND UTILIZATION IN THE CASE OF JIMMA ZONE, OROMIYA NATIONAL REGIONAL STATE: A CROSS SECTIONAL STUDY****Zewdie Birhanu¹, Ameyu Godesso¹, Challi Jira², Sudhakar Morankar¹****ABSTRACT**

BACKGROUND: *Health promotion and health education activities rely on a variety of well designed and effective printed Information Education Communication materials to help ensure success. However, in Ethiopia, there is no well established evidence that shows the extent to which printed Information Education Communication materials are produced distributed, utilized and the existing needs and gaps. Therefore, the objective of this study was to assess the process of printed Information Education Communication materials production, distribution and utilization and to identify current Information Education Communication needs and gaps.*

METHODS: *Cross sectional study combining quantitative and qualitative approaches was conducted at Federal, Regional (Oromiya), zonal (Jimma) and facility levels. Fourteen health centers within Jimma Zone were randomly selected and 303 health workers working in these health centers were included in the study. Purposive sampling technique was used to identify respondents for in-depth interview. The quantitative data were analyzed by SPSS for windows version 16.0.*

RESULTS: *The materials designed both by the Health Education Extension Center and Oromiya Regional Health Bureau were not fully culture sensitive. Information Education Communication materials inventories had not been practiced, particularly at zonal and health center levels. Furthermore, at zonal and health center level, there were no safe storage places. Chronic shortage of Information Education Communication materials was reported consistently. Only 206 (68.0%) of the participants had ever used printed Information Education Communication material. 146 (48.2%) and 29 (9.6%) of the participants were rated the IEC material they have seen as very good in terms of under stability and the extent to which it takes the local context into account, respectively. Participants who were nurse and laboratory technologist were 0.35 and 0.23 times less likely to use IEC materials than environmental Health experts [AOR=0.35, 95% CI: 0.14-0.85] and [AOR=0.23, 95%CI: 0.07-0.79], respectively. Graduates of private colleges were 10 times more likely to report utilization of IEC materials than graduates of government institutions [AOR=10.46, 95% CI: 3.47-31.50].*

CONCLUSION: *This study revealed that design, production, distribution and utilization of printed Information Education Communication materials were not in line with the underlying principles of Information Education Communication material development. Thus, all concerned institutions and individuals should work towards to improvement.*

KEY WORDS: *Production and distribution, utilization of printed IEC materials*

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INTRODUCTION

About 80% of the health problems in developing countries could be alleviated by well

designed health education and promotion activities (1,2). In the past 20 years of research in international public health have conclusively demonstrated that Information, Education and Communication (IEC) interventions that are reflective of and responsive to local cultures and conditions are far more effective to bring behavior change (3). To this end, the health policy of Ethiopia has recently given high priority to IEC to improve the health situation of the country. IEC is now considered as cross cutting issues and tools to deliver all the packages currently Health Extension Workers (HEWs) are being implementing (4-6).

At the heart of IEC strategies are printed IEC materials. Printed IEC materials are believed to be enhancing learning, reinforce message learned through other channels, it carries information and instructions, serves as motivators and reminders for action. To put these scientifically proven benefits of these materials into action, it should be produced in line with the principles of health education and promotion to deal with a specific health concern and to be well received and persuasive among a specific audience and it should be distributed timely and utilized efficiently to give production meaning (7-10). However, studies are very limited on level of production, distribution channels and utilization of the printed IEC materials. One study conducted in India revealed that 72.5% of the printed IEC materials received by district health office were pamphlets and only 14.4% of the health personnel had used printed IEC materials. Another study conducted in Africa showed that 45% of the materials received by health facility were less than 10 in quantity. Thirty eight percent of the materials had no balance left in the facilities and 42.6% of the materials were distributed during health education activity (11,12).

In Ethiopia, the extent of printed IEC material production, distribution, utilization and the existing gaps has not yet subjected to scientific inquiry. Thus, the overall objective of this study was to assess printed IEC materials production, distribution, utilization and to identify current needs and gaps.

METHODS AND MATERIALS

A cross-sectional study was conducted in June, 2009 combining quantitative and qualitative methods. The data were collected at four levels which included the Health Education Extension Center (HEEC) at Federal level, Oromiya Regional Health Bureau (ORHB), Jimma Zonal

Health Office and at health center level in Jimma Zone. At the HEEC and ORHB, health workers and experts who had been involved in IEC materials production and distribution process were interviewed. At zonal and health center levels, IEC coordinator and other key informants were included in the study. However, for the quantitative part of the study, fourteen health centers were randomly selected and all health workers working in the selected health centers were interviewed. In addition, health extension workers existing under the catchment area of health center took part in the study.

The sample size for quantitative part of the study was determined by single population proportion formula assuming, proportion of printed IEC materials utilization to be 50%, marginal error (d) 5% and confidence interval of 95%. 50% has been preferred due to lack of similar studies in Ethiopia. Accordingly, the sample size was calculated to be 384. The final sample size was calculated by correction formula and considering 10% non-response rate, the final sample size was 303 and ten in-depth interviews were conducted with purposely selected individuals at various levels. Data collection instrument was adapted from similar studies. It includes semi-structured questionnaires, check list and interview guides. The semi-structured questionnaires were used for data collection among health workers at individual level. The instrument was pre-tested on 5% of similar population. The quantitative data were collected by face-to-face interview technique by trained data collector. However, the in-depth interview and observation were conducted by the investigators. The quantitative data were analyzed by SPSS for windows version 16.0. Multivariate analysis was conducted to examine the factors associated with utilization. The qualitative data were analyzed thematically and supported by quotations. This study was approved by the Ethical Committee of Jimma University. Verbal consent was sought from each respondent.

RESULTS

Three hundred three health workers have participated in the study producing a response rate of 100% where half of the participants were females. Fourteen health facilities, one zonal health department, one Regional Health Bureau and HEEC at the federal level were surveyed. One hundred three (34.7%) were nurses followed by Health Extension Workers, 71 (23.4%). Two hundred eighty (92.4%), of the participants were reported that they had

received health education course while they were in colleges and none of the participants had received training on IEC (not presented in table)

HEEC was the only government institution responsible for the production of IEC materials for all regions in Ethiopia. Primarily, the center designs and produces IEC materials for the general public. On the other hand, regions themselves design IEC materials according to their own context and needs and give it to HEEC for duplication. Then, whenever production of new materials completed, each region is communicated to receive these materials. However, they have no initiation to receive the material timely. The key informant commented that *"They are not happy to receive IEC materials on time. ... They are contented and hasten to receive car or bicycle."* (52 years old male working in HEEC).

Sometimes, the center transports the materials to the regions and even up to the zonal level. Currently, however, the services that were once given in HEEC have virtually stopped. Observation and interview with the key informant revealed that some of the units once used for these activities are now changed to a store room because of the structural adjustments the center was undergoing. Currently, the center has brought under the Ministry of Information Communication. The key informant ascertained that *"The new structure is not conducive to the whole process of these materials. The various teams that had existed in the center were demolished. All the activities undertaken by these teams were totally collapsed."* (52 years old male working in HEEC).

Similarly, the Oromiya Regional Health Bureau (ORHB) followed three approaches for designing printed IEC materials. Primarily, the ORHB has been responsible for designing materials that have particular importance for the region alone. In doing so, vigorous attempts have been made to reflect the cultural aspects of the society. Except for leaflet, they pre-test these materials. Secondly, the ORHB also adapts IEC materials produced by the HEEC. Thirdly, there were cases in which various NGOs, particularly FHI/FP, UNICEF and WHO consults the region for designing IEC materials. However, the key informant from ORHB noticed that most of the materials which produced both by NGOs and ORHB were not culture sensitive. With regard to the distribution

of these materials, the ORHB relies on waiting for opportunities such as when people from zones are invited for meeting; or when the regional experts visit to the zone; and when drugs and other medical equipments are transported.

Management of IEC materials at zonal and health center: The zonal health office also does not request for IEC materials. They usually apply for IEC materials during epidemics and when ORHB informs them. If not the zones do not usually demand IEC materials and do not have a plan. By the time of survey, IEC materials were not available at zonal health office and in all health centers surveyed. In-depth interview participants were also commented in similar way. Furthermore, in all health centers IEC materials were not totally kept in stock rather thrown in unsafe and undetermined places. No documentation and stock balance had been practiced across each health centers and at zonal health office. Chronic shortage of IEC materials was consistently reported in all health facilities. Consequently, activities related IEC materials are not intended rather best described as casual activities. A 45 years old key informant from the zonal health office commented that, *"Supply of IEC materials is almost discontinued. Currently, IEC activities are lost attention. In addition, IEC materials are not supplied in line with the needs in terms of themes and quantity. The preparation and production of these materials are very vertical and we have no any role in the production of these materials."*

The zone also heavily relies opportunity to dispatch IEC materials, if it occurred at all. Furthermore, all the key informants argued that activities related to IEC are considered as superfluous and it is being based on individuals' free will not just as organizational requirement basically due to lack of operational guideline at all levels.

Awareness and utilization of printed IEC materials: Two hundred forty four (80.5%) and 198 (65.3%) of the participants were reported that they knew poster and flip chart, respectively. Only 206 (68.0%) of them reported that they had ever used printed IEC materials for educational purpose. The in-depth interview result also reflected supportive finding. Lack of the materials was the main reason cited by 59 (60.8%) of non users (Table 1).

Table 1. Awareness and utilization of printed IEC materials among health workers, South West Ethiopia, June, 2009.

| Characteristics | Frequency | Percent |
|-----------------|-----------|---------|
|-----------------|-----------|---------|

| | | |
|--|-----|-------|
| Awareness about IEC materials (N=303) | | |
| Poster | 244 | 80.5 |
| Flip charts | 198 | 65.3 |
| Leaflets | 168 | 55.4 |
| Cards | 26 | 8.6 |
| Others | 18 | 5.9 |
| Print IEC materials are important | 285 | 94.1 |
| Ever used IEC materials | 206 | 68.0 |
| How often used IEC materials (N=206) | | |
| Always | 67 | 32.5 |
| Occasionally | 139 | 67.5 |
| Commonly used IEC materials | | |
| Poster | 178 | 86.4 |
| Flip charts | 49 | 23.8 |
| Leaflets | 30 | 14.6 |
| Reason for not using IEC materials (N=97) | | |
| Unavailability | 59 | 60.8 |
| Lack of appropriate material | 22 | 22.70 |
| Time consuming | 5 | 5.2 |
| Other reasons | 7 | 5.5 |
| Intention to use IEC materials in the future | 53 | 54.6 |

Distribution practice of printed IEC materials by health workers: The study revealed that only 181 (59.7%) of the participants reported that they had been engaged in the distribution of printed IEC materials at least once. Health center, schools and

community gathering were the main places where printed IEC materials were distributed (Table 2). Result from the in-depth interview indicated that there was not much practice with regard to distribution of IEC materials.

Table 2. Printed IEC materials distribution practice among health workers, South West Ethiopia, June, 2009.

| Distribution practice | Frequency | % |
|---|-----------|------|
| Ever distributed | 181 | 59.7 |
| Place of distribution (N=181) | | |
| Health center | 111 | 61.3 |
| School | 80 | 44.2 |
| Public gathering | 56 | 30.9 |
| Households | 14 | 7.7 |
| Other places | 9 | 5.0 |
| Type of IEC materials distributed (N=181) | | |
| Posters | 148 | 81.8 |
| Leaflets | 56 | 30.6 |
| Flip charts | 35 | 19.3 |
| Other materials | 6 | 3.3 |

Perceived appropriateness of printed IEC materials: About One hundred forty six (48%) of the participants rated printed IEC materials as very good with respect to understandability and 29 (10%) appreciated the extent to which it takes account the local context (Table 3). All in-depth interview participants also complained that most of the materials were not appropriate to the context. For instance, a 25 years old male key informant from the health center said, “*as most materials are not compatible with the culture of the community, many clients do not want to watch at any materials. The community does not feel that the message is directed towards them.*”

Determinants of Printed IEC material utilization: Multi-variate logistic regression analysis revealed that professional categories, work experiences, college of graduates, believe in the importance of IEC materials, perceived understandability of the materials and belief to the extent to which printed IEC materials consider local context were predictors of utilization of the printed IEC materials (Table 4).

Accordingly, those participants who were nurse and laboratory technologist were 0.35 and 0.23 times less likely to use IEC materials than environmental Health experts [AOR=0.35, 95% CI: 0.14-0.85] and [AOR=0.23, 95%CI: 0.07-

0.79] respectively. Similarly, participants who had a work experience of three to five years were 3.71 times more likely to use printed IEC materials than those who had worked for less than one year [AOR=3.71, 95%CI: 1.35-10.18]. On the other hand, graduates of private colleges were 10 times more likely to report utilization of IEC materials than graduates of government institutions [AOR=10.46, 95% CI: 3.47-31.50]. **Preference of IEC materials:** Among printed IEC materials poster was the most preferred to other materials by 258 (85.1%) of participants followed by leaflets 25 (8.3%) (Not in table). The in-depth interview participants noticed that posters with locally sensitive picture are very

effective and should be emphasized as it catches eyes. For instance, 26 years old male key informant from the health center argued as, “poster has superior advantage than any other printed IEC materials. Because, it can pass information by its own right and could be posted at any place where many people can watch it.” With regard to the health issues on which these IEC materials prepared HIV/AIDS (55%), malaria (45%) family planning (37%) and environmental hygiene (24%) were the top leading issues recommended by the participants (not in table).

Table 3. Perceived appropriateness of printed IEC materials, South West Ethiopia, June, 2009

| Characteristics | Perceived appropriateness | | |
|---|---------------------------|---------------|--------------|
| | Very good N (%) | Good N (%) | Bad N (%) |
| Understandability | 146 (48.2) | 139 (45.9) | 18 (5.9) |
| Comprehensiveness | 105 (34.7) | 185 (61.1) | 13 (4.3) |
| Diagrams match with written information | 128 (42.2) | 168 (55.4) | 7 (2.3) |
| Use of colors | 131 (43.2) | 154 (50.8) | 18 (5.9) |
| Considering local culture | 29 (9.6) | 240 (79.2) | 34 (11.3) |

DISCUSSION

Efforts were made to assess printed IEC materials development, production, distribution and utilization at different levels of health facilities. The IEC materials that were utilized in the study area were produced by HEEC and to a lesser extent by NGOs. It is often the case that IEC materials never reach those who need them or who could most effectively use them and hence, to ensure efficient and effective use of these materials, planning a distribution

strategy and setting up a distribution network at the beginning is very crucial (8,13). However, at the time of the survey, IEC materials were absolutely unavailable at the zonal level and in all health centers. Furthermore, it was evident that no follow up about the distribution and utilization of those materials has been practiced. These intact prevalent challenges that have been observed were basically arise from lack of well institutionalized production, distribution and utilization system at all levels.

Table 4. Association of selected variables with utilization of printed IEC materials among health workers, South West Ethiopia, June, 2009

| Variables | Ever used IEC materials | | | P-value | AOR (95% CI) | |
|------------|-------------------------|-----|-------|---------|--------------|-------------------|
| | Yes | No | Total | | | |
| Sex | Male * | 102 | 51 | 153 | 0.435 | 1.00 |
| | Female | 104 | 46 | 150 | | |
| Age | ≤24* | 96 | 60 | 156 | 0.248 | 1.00 |
| | 25-34 | 75 | 29 | 104 | 0.068 | 1.81 (0.95-3.43) |
| | 35-44 | 32 | 6 | 38 | 0.252 | 2.31 (0.55-9.67) |
| | ≥45 | 3 | 2 | 5 | 0.852 | 1.33 (0.06-28.13) |
| | EHE* | 32 | 13 | 45 | 0.048 | 1.00 |
| categories | Nurse | 68 | 35 | 103 | 0.020 | 0.35 (0.14-0.85) |
| | Health Officer | 11 | 3 | 14 | 0.860 | 0.86 (0.16-4.52) |
| | HEP | 2 | 0 | 2 | 0.999 | 0.51 (0.01-1.34) |
| | Pharm. | 29 | 3 | 32 | 0.397 | 1.85 (0.44-7.78) |
| | LT | 20 | 16 | 36 | 0.020 | 0.23 (0.07-0.79) |
| | HEWs | 44 | 27 | 71 | 0.999 | 0.23 (0.14-0.85) |

| | | | | | | |
|--|-------------------|-----|----|-----|-------|--------------------|
| Levels of Education | BSc* | 52 | 28 | 80 | | 1.00 |
| | Diploma | 110 | 42 | 152 | 0.999 | 1.20 (0.09-3.03) |
| | 10+1 | 44 | 27 | 71 | 0.999 | 2.45 (1.00-4.89) |
| | ≤1.00* | 63 | 39 | 102 | 0.078 | 1.00 |
| Work experiences in year | 1.01-3.00 | 66 | 39 | 105 | 0.939 | 0.97 (0.50-1.88) |
| | 3.01-5.00 | 32 | 7 | 39 | 0.011 | 3.71 (1.35-10.18) |
| | 5.01-10.00 | 20 | 7 | 27 | 0.947 | 1.04 (0.31-3.39) |
| | ≥10.01 | 25 | 5 | 30 | 0.324 | 2.41 (0.42-13.85) |
| Institution of graduate | Government* | 157 | 90 | 247 | 0.004 | 1.00 |
| | Private | 49 | 7 | 56 | 0.001 | 10.46 (3.47-31.50) |
| Receive health education courses | Yes* | 192 | 88 | 280 | 0.172 | 1.00 |
| | No | 8 | 3 | 11 | 0.681 | 1.40 (0.28-7.04) |
| Believe the importance of HE | I do not remember | 6 | 6 | 12 | 0.099 | 0.25 (0.05-1.29) |
| | Yes* | 194 | 93 | 287 | 0.217 | 1.00 |
| | No | 12 | 4 | 16 | 0.071 | 0.94 (0.61-8.78) |
| Believe in the importance of IEC Materials | Yes* | 193 | 92 | 285 | 0.003 | 1.00 |
| | No | 13 | 5 | 18 | 0.004 | 0.56 (0.24-0.89) |
| Perceived understability of the materials | Very good* | 106 | 40 | 146 | 0.003 | 1.00 |
| | Good | 100 | 39 | 139 | 0.001 | 0.73 (0.12-0.95) |
| | Bad | 0 | 18 | 18 | 0.018 | 0.56 (0.02-0.89) |
| | Very good* | 19 | 15 | 34 | 0.003 | 1.00 |
| Consider local context | Good | 174 | 66 | 240 | 0.012 | 0.23 (0.04-0.97) |
| | Bad | 13 | 16 | 29 | 0.035 | 0.37 (0.02-0.86) |

*reference group **HE**: Health Education **LT**: Laboratory Technician **EHE**: Environmental Health Expert

Basically, IEC materials are designed to deliver health messages for the local community where community based health workers, specifically, HEWs are primarily use it to support their communication (8). Even though, the existing distribution practice among health workers is encouraging, the setting for distribution was not appropriate. This is evidenced by the fact that the majority of those materials were consumed within the health facility which is inconsistent with the finding from India (14). The observed difference might be due to the higher distribution practice outside to the health facility in the previous study. Furthermore, most of these materials were displayed at inappropriate places even within the health facility and misuse was consistently seen across each health center. This is quite different from a study conducted in India (11). Posters reflecting health issues such as HIV/AIDS, malaria and family planning were in need by all health centers and the zone. These issues are consistent with the Ethiopian national health communication strategy (7) and

hence, give a good opportunity for further strengthening of the communication strategy in such a way that it takes the local context into account.

IEC materials should be designed taking the local context and cultures into account in order to bring the intended changes among the target groups. Unless this principle is obeyed, it has limited effect (8). However, the majority of the participants were not comfortable with these materials. This finding is inconsistent with the finding from India (11). However, lower culture sensitive printed IEC materials were also reported in the study from South Africa and other country (14,15). In the health policy of Ethiopia, it was smartly stated that Information, Education and Communication (IEC) shall be given appropriate prominence (1,9). However, what is happening in the reality is not encouraging. IEC activities at all levels considered as worthless. If the IEC activities are neglected in the practice, the path to health development strategy will be half way.

In conclusion, the study revealed that printed IEC materials produced both by HEEC and ORHB is not culture sensitive. Poor management of these materials was seen at each level of health facility. Moreover, printed IEC materials were not available during the survey and poor utilization was consistently reported. These demands HEEC and ORHB should proactively design and produce culture sensitive printed IEC materials by involving the zone, district health office and health centers in the development process. Moreover, IEC materials should be properly managed, adequately and timely supplied, distributed and utilized efficiently at each level, particularly at health facility. The researchers also believed that depth and breadth information on the topic was meager since the data was collected during the structural adjustment in the health sector.

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