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ACCESSIBILITY, PREFERENCE AND UTILIZATION OF HEALTH MESSAGE COMMUNICATION CHANNELS AMONG THE RESIDENTS OF ASMARA, ERITREA IN 2018

Linto M Thomas[1], Samuel Jirom Wolday[1], Aman Yonas Gebrehannes[2*], Meron Mehari Kifle[2], Beshir Salih[2], Habteab Mulugheta Bahlbi[2], Yemane Tewelde Solomon[2], Zemenu Haile[2]

[1*]Department of Nursing, Asmara College of Health Sciences, Asmara, Eritrea, North East Africa.
[2]Department of Public Health, Asmara College of Health Sciences, Asmara, Eritrea, North East Africa.

ABSTRACT

Background: According to the documents of Eritrean MoH, there was no comprehensive study conducted regarding the accessibility, preference and utilization of health message communication channels. There is lack of baseline information that is necessary to evaluate and improve the appropriateness of the channels regarding health information. Therefore, this study was aimed to assess the accessibility, preference and utilization of health message communication channels among adult population of Asmara, Eritrea in 2018. **Methodology:** Multistage cluster sampling design was employed to select households for the study. Individuals aged 18-62 years who are mentally and physically healthy to respond were included as study participants. Data was collected using partially open ended questionnaire which was administered by the research team members and it was analyzed using Statistical Package for Social Sciences (SPSS version 20). **Result:** This study found out that television was the most accessible channel (97.1%) followed by radio (85%) and print media (77.4%). Coming to preference also, television was the most preferred channel (77.1%) followed by radio (54.5%) and health facility (54.1%). The results of channel utilization similarly identified television as the most utilized channel (88.5%) followed by radio and print media with 36% each. **Conclusion:** Television was found to be the most accessible, preferred and utilized channel for health message dissemination to the public. Moreover, the results of this study revealed that combination of channels was necessary to disseminate health information to the target population, because each channel was found to be accessible, preferred and utilized by different segments of the audience. Specific recommendations were forwarded based on the conclusion.

KEYWORDS

Communication channels, Health messages, Accessibility, Preference and Utilization.

Author for Correspondence:
Aman Yonas Gebrehannes,
Department of Nursing,
Asmara College of Health Sciences,
Asmara, Eritrea, North East Africa.

Email: yonasgebrehans360@gmail.com

INTRODUCTION

The advancement of information technology has become important due to the fact that communication is increasingly becoming a socio-cultural phenomenon affecting a wide range of activities globally. It is an integral part of social, economic, cultural, scientific, political, technological, and educational development in all

nations of the world. Having information timely can make differences in people's decision making process and actions[1].

The process of exchanging information is known as communication and it is at the heart of who we are as human beings. Communication is a dynamic process in which a source and a receiver of information interchange their messages[2]. The transmission of messages from the source to the receiver requires a medium through which the message has to pass. This medium is called a communication channel and in the context of health, it is termed as "Health communication channel"[3].

Health communication channel refers to any channel that is used in transmitting messages related to the health of target audience. Communication channels are employed at all levels of public health in the hope that three effects might occur: the attainment of correct health information, the change in health attitudes and the establishment of new health behaviors[4].

Health communication channels, being the routes to reach target audience, play a key role in the dissemination of health messages designed to create awareness, change attitudes, and motivate individuals to adopt recommended healthy behaviors[5].

The channels that can be used for health communication are of three types, namely mass media, interpersonal communication, and community-based interactions. It is important to understand the characteristics, strengths and weaknesses of those channels in order to assure effective health communication. Each channel has its own characteristics, advantages and disadvantages, as listed below

Mass Media

Mass media are tools used to transfer information to the general and specific audience and they include television, radio, internet, and print media like newspapers, magazines, pamphlets, brochures, and posters. They are important in achieving public health goals; however, using mass media can be counterproductive if the channels used are not audience-centered, or if the message being delivered is too emotional, fear arousing, or controversial. The counter productivity usually can be avoided through proper formative research, knowledge of the audience, experience in linking channels to audiences, and message pre-testing[6].

The advantages of mass media are many namely**;** can provide information to large population, can help change and reinforce attitudes, can promote an immediate action and can demonstrate the desired action. Whereas the disadvantages of mass media; are less personal and intimate, are less trusted by some people, do not permit interaction, offer limited time and space, usually cannot change behavior and can be costly[7].

Interpersonal Channels

Interpersonal communication is an exchange of information between two or more people. It is also referred to as face-to-face communication and it includes community meeting, health education in health facilities, family members, etc. During interpersonal communication, there is message sending and receiving through direct or indirect means or both. Interpersonal communication becomes successful when the message senders and the message receivers understand the message[8].

The advantages of interpersonal channels are it can be credible, can permit two-way discussion, and can be motivational, influential and supportive. The disadvantages of interpersonal channels**:** can be expensive, can be time consuming and can have limited target audience reach[7].

Community Channels

Community channels are traditional social interactions through which exchange of information takes place. Examples of community channels include: schools, employers, community ceremonies, community organizations, religious institutions and special events. They have a great role in information dissemination and can take so many forms like special events and community involvement. Special events include street fairs, job fairs, health fairs, and local celebrations which can deliver public information to large number of people and improve media exposure of communities.

Community involvement can be ensured through the participation of community institutions, such as, libraries, schools, religious institutions, and other

social groups which can play an important role in implementing special events and provide leadership in communities to mobilize local resources and inspire citizens to join their efforts[7].

The advantages of community channels are may be familiar, trusted, and influential, may be more likely than media alone to motivate/support behavior change, can reach groups of people at once, can sometimes be inexpensive and can offer shared experiences. The disadvantages of community channels can sometimes be costly, can be time consuming and may not provide personalized attention.

Communication competence may be achieved by choosing appropriate channels that are more accessible, preferred and highly utilized by target audience. A chosen channel may be an appropriate way to achieve the goal, yet it may not have a required degree of social presence or reach. Which channels, then, are appropriate[2]?

The appropriate channel(s) for a specific project can be selected by assessing whether the channel is: likely to reach a significant portion of the target audience, likely to reach the audience often enough to provide adequate exposure to the message/program, credible for the target audience, appropriate for the selected type of message and the program purpose and feasible with available resources.

Choosing multiple channels can help combine their best traits and reinforce the message through repetition. For example, a major daily newspaper may reach the most people. Adding stories and publicizing them in a local newspaper can help the readers get more information tailored to their needs[7].

Experience shows that any of the various forms of communication channels is applicable as long as its audience is well defined. The audience to be communicated can be identified by looking at the level of awareness, the geographical location, and the organizational characteristics. It is also important to know the norms and values of the people as well as their traditional social communication channels, before deciding to use a specific channel[3].

Every channel has its own strengths and weaknesses; therefore, it is necessary to know the various aspects of channels for more meaningful use as there is no single channel that is suitable for every situation and context of communication. Sometimes the message may be good but while using a certain channel, it may not be effective or can lead to miscommunication. As it is sought to enhance the audience centered communication channel, audience centeredness must be at the core of message design and channel selection. Audience centeredness, in this context, means understanding the audiences' resources, skills, and preferences[9].

This study was intended to assess the accessibility, preference and utilization of communication channels for dissemination of health messages among the residents of Asmara city in 2018.

METHODS

Multistage cluster sampling design was employed to select households for the study. It was designed to assess the accessibility, preference and utilization of communication channels for health message dissemination among adult residents of Asmara city, Eritrea from July to September 2018. It was preferred for this study as it was necessary to pass through all the hierarchical structures of Asmara (subzones, local administrative regions, blocks and households).

Sample size estimation

The initial sample size was determined by specifying the level of confidence required, the sampling error that is acceptable, and by making an initial estimate of p. The formula used to determine the initial sample size is:

$$n_1 = \frac{z^2 p(1-p)}{e^2}$$

The total sample size was calculated using the following assumptions; estimated proportion of people with media exposure (p= 0.5), confidence interval 95% (z=1.96), the margin of error or precision (e= 0.07).And a result of 204 households (n_1) was obtained. Then it was adjusted taking into account:

1. The size of the population sampled (N), using the formula $n_2= n_1(N/N+n_1)$ where, n_1 is the initial sample size and N is the total number of households.

2. The expected non-responses, using the formula $n_3 = n_2/r$ where, r is the response rate.
3. The design effect (DEFT) of the design used, using the formula $n_4 = n_3$ (DEFT) where, n_4 is the final sample size.

To make the adjustment, non-response rate of 5% and DEFT of 1.5 were used. Therefore, the final overall sample size was adjusted to 322 (n_4) households.

Sampling design

The sampling design that is applied in this study was multistage cluster sampling method. As a first stage of the sampling, four sub-zones were selected from the 13 sub-zones of Asmara using the Probability Proportional to Size (PPS) method, size being the number of households in each sub-zone.

Random method of PPS was used and its steps were:

1. Calculate the cumulative size measures for each unit in the population.
2. Determine the range corresponding to each unit in the population.
3. Select a random number between 1 and the total cumulative size (N) and select the unit whose range contains the random number.
4. Repeat the third step until 'n' units have been selected Using the above steps, the thirteen subzones were arranged in the following order:

Then, four random numbers between 1 and the total cumulative size (N) were selected consecutively and the four subzones whose range contains the random numbers were selected as the primary sampling units. Those subzones were Abashawl, Akria, Godaif and Maekel ketema. At the second stage of sampling, four local administrative regions were selected from each of the four subzones using Simple Random Sampling (SRS). However, when a subzone was found to have less than four local administrative regions, all of them were included without using SRS. At the third stage, the selected local administrative regions were segmented into blocks of 200 households and SRS was used to select a block from each local administrative region. At last, 20 households were selected from each selected block using systematic random sampling with sampling interval (k) of 10. In this way, 160 households were selected from Godaif and Maekel ketema (80 HHs each); but, for Abashawl and Akria, 81 households were selected from each, in order to attain the total sample size of 322 households.

Data collection instruments

Data was collected using pre-tested partially open ended questionnaire administered by the research team members. The questionnaire consisted of four parts which included participants' socio-demographic data, attitude and practice of the respondents as well as accessibility, preference, and utilization of health message communication channels.

Data analysis

After completion of data collection, descriptive statistics such as mean, standard deviation, frequency tables, charts, and graphs were used to analyze and present the descriptive data. The quantitative data was entered and analyzed using Statistical Package for Social Sciences (SPSS version 20). Chi-square test procedure has been employed to determine the statistical significance on the association between the likelihood of accessibility, preference and utilization of communication channels and different socio-demographic characteristics. Logistic regression analysis was also done to identify the most important and net effect of the socio-demographic factors on accessibility, preference and utilization of channels among the adult residents of Asmara aged 18-62.

Ethical consideration

A formal letter was written from the school of Public Health to the office of Zoba Maekel to obtain permission and get the population sizes of all the sub-zones included in Asmara. After permission was obtained, formal message was sent to the selected sub-zonal offices and allowance was obtained from respective personnel in charge of each sub-zone. Then the selected local administrative regions of each selected sub-zone were contacted prior to data collection. Finally, after brief explanation of the study purpose, verbal consent was obtained from the study participants.

Pilot study

To address face validity, pilot study was carried out in ten households in Mekane-gennet local

administrative region which is found in Paradizo sub-zone. The pilot study was aimed at assessing the validity and sensitivity of the questionnaire.

RESULTS

Demographic characteristics of respondents

The response rate of this study was 97.5% with 2.5% non-response rate. All households had access to electricity which is basic for utilization of channels and almost all respondents had media exposure with varying degrees.

As an inherent weakness of household studies, majority of the study participants were females (>83%) and most of them were housewives. In educational context, participants with secondary educational level were the most in number; whereas, those who have attended adult education were the least.

The mean age of the study subjects was (34 years) ± (10.875) SD, and the minimum and maximum ages were 18 and 60 years respectively. Moreover, 58.3% of the respondents were young adults (aged 18– 35), 18.5% were middle aged adults (aged 36 - 44), and 23.2% were seniors (45 years and above).

Accessibility and Utilization of channels

Television

97.1% of the respondents had television and 88.5% used it as their usual source for health information. The frequency of watching television was 79.9% every day, 14.3% at least once a week, 1.9% less than once a week, and 3.8% not attending at all.

Radio

85% of the households had a receiver radio. 41.4% used radio as their usual source of general information and 36% used it as usual source of health related information. The frequency of listening to radio was 21.3% everyday, 22% at least once a week, 11.1% less than once a week, and 45.3% not attending at all.

Print media

77.4% of the respondents used print media (newspapers, posters, billboards, books, booklets, brochures, pamphlets/flyers, etc.) as their usual sources of general information. However, only 36% used print media as their usual sources of health information. The frequency of reading newspaper was 15.9% every day, 31.2% once a week, 18.2% less than once a week, 30.3%not reading at all and 4.5% not able to read.

Community channels

32.2% of the participants stated that they depended on friends and relatives for general information; but, only 22.6% used it for health information. Moreover, community ceremonies and peers were used as usual sources of health information by 9.9% and 4.5% respectively.

E-media (electronic media other than television and radio)

89.8% of respondents had cell phones, 74.5% had tape recorders, 15.3% had computers, and 8% had I-pads. 15% of respondents identified e-media as their usual sources of general information; however, only 0.3% used it as their usual source of health information.

Internet

18.5% of respondents identified internet as their usual source of general information and 7.3% identified it as their usual source of health information.

88.9% of respondents have received health messages in the last 12 months prior to this study. The disease specific messages received were about malaria, TB, diarrhea, NCDs, HIV/AIDS, child health, pregnancy and delivery, cholera and other diseases.

Association between age and utilization of health facility and internet (P<0.01)

From the regression analysis, respondents of the age group 27-35 were 1.026 times more likely to utilize health facility compared to others. (CI=95%, df=1, S.E=0.011, P=0.018) and respondents of the age group 54-62 were 0.954 times less likely to utilize internet compared to others (CI=95%, df=1, S.E=0.02, P=0.021).

Television and e-media were the most and the least commonly used channels respectively.

Association between gender and utilization of health facility and internet (P<0.05)

From the regression analysis, females had 1.984 times more probability of utilizing health facility than males (CI=95%, df=1, S.E=0.306, P=0.025). However, they were 0.277 times less likely to utilize

internet compared to males (CI=95%, df=1, S.E=0.458, P=0.005).

Association between educational level and utilization of print media, internet and community meeting (P<0.05).

There was significant association between educational level and channel utilization. 85% of those who used print media were postgraduates, 18% of those who utilized community meeting were college level and non-educated, and 41% of those who used internet were college level.

Preference of channels

Regarding preference of channels, respondents mainly preferred television (77.1%), radio (54.5%), health facility/health providers (54.1%), and print media (35%) for health information.

Besides, when participants were asked 'Which channel is most important?' 66.9% replied 'television', 10.5% 'radio', 9.2% 'health facility' and 7.3%'print media'.

Association between gender and preference of print media (P<0.001)

There was significant association between preference of print media and gender. From the binary regression analysis, females were found to have 0.254 times less preference to print media compared to males (CI=95%, df=1, S.E=0.314, P=0.000).

Attitude and practice of subjects towards communication channels

All the respondents thought that transmission of health information is very crucial in their lives and said that they wanted to know about risk factors, transmission and prevention of diseases.

Respondents were asked for their health information seeking behavior and 22.3% were found to have searched for health information before they become sick. The channels used to search for health information by those respondents mainly included: health facility, television and print media.

DISCUSSION

This was the first comprehensive study in Eritrea which was aimed to assess accessibility, preference, and utilization of health message communication channels which were grouped under three categories, namely, mass media(e.g., radio, television, print materials, internet), interpersonal channels (e.g., family members and friends, health care providers, CHAs, teachers), and community channels (e.g., schools, employers, community meetings and organizations, religious institutions, special events).

Socio-demographic characteristics of respondents

Findings in (Table No.1) revealed that most of the respondents were females (83.1%) while males accounted only for 16.9%. This may be associated to the fact that the data collection was done in the day time and females were more available at home.

Majority of the participants surveyed were young adults aged 18-35 years (58.3%). Middle aged adults (36-44) and those aged 45 years and above accounted for 18.5% and 23.2% respectively. The mean age of the respondents was 34 years and the minimum and maximum ages were 18 and 60 years (Table No.1).

(Table No.1) showed that 61.2% of the respondents were with secondary or higher level of education and 23.9% have attended junior secondary education. Participants who have attended elementary school and adult education accounted for 9.2% and 2.5% respectively. The remaining 5.1% of the respondents were illiterate.

Most of the respondents were housewives (50.3%) and respondents who were engaged in some form of employment together accounted for 31.8%. Moreover, unemployed and students accounted for 8.9% each (Table No.1).

Accessibility and utilization of health message communication channels

This study found out that all households which were selected in the sampling process had electricity supply and electronic devices that enable them to have access to information. Television, radio, and newspapers/magazines were more accessible channels of communication for majority of the respondents, whereas computers, I-pads and internet were less accessible channels. Similar study from India indicated television, newspapers, radio, magazines and internet as more accessible channels compared to others[10].

The respondents mainly used television (97.1%), print media (77.4%), radio (41.4%), and friends and relatives (32.2%) for general information. Internet

and e-media were also used by 18.5% and 15% respectively. Regarding health information, television was the most utilized channel (88.5%) for health information followed by print media and radios each accounting for 36%. Community channels such as, community gatherings, religious institutions etc. were used as usual sources of health information by 22.6% of the respondents. Internet and e-media were also used by 7.3% and 0.3% respectively.

Malaria Indicator and Prevalence Survey of Eritrea reported that the main sources of information for malaria were health facility (36%), community meeting (35.8%), radio (24.9%) and CHA (24.2%); while mobile video units, newspapers, banners and print materials such as posters/brochures were among the lowest mentioned as sources of malaria awareness messages[11].

Regarding the association of age with utilization of health facility and internet, health facility was highly utilized by respondents aged 27-35 years and less utilized among participants of the age groups 18-26 and 54-62 years. Respondents of the age group 27-35 were 1.026 times more likely to utilize health facility compared to others (CI=95%, df=1, S.E=0.011, P=0.018). Internet was highly used by respondents aged 18-26 years and less utilized in the other age groups. Participants of the age group 54-62 were 0.954 times less likely to utilize internet compared to the others (CI=95%, df=1, S.E=0.02, P=0.021).

The study findings revealed that health facility was more utilized by female respondents (69%) (P=0.02) compared to males (53%) and internet was more utilized by male respondents (17%) (P=0.003) compared to females (5%). Females were 1.984 times more likely to utilize health facility (CI=95%, df=1, S.E=0.306, P=0.025) and 0.277 times less likely to utilize internet compared to males (CI=95%, df=1, S.E=0.458, P=0.005). This finding may be associated to the fact that females visit health facilities during their antenatal and postnatal periods as well as child and self TT vaccination while males do not utilize health facility services that much.

As indicated in (Table No.3), occupation had significant association with utilization of health facility (P=0.000), television (P=0.009), peer discussion (P=0.026), e-media (P=0.05) and internet (P=0.000). House wives used television and health facility as main channels of health information accounting for 93% and 78% respectively. Television and health facility were highly utilized by respondents of almost all the occupations. Internet was mostly used by students (39%) and in lower percentages by employed people (19%) and military (9%), while peer discussion, and e-media were found to have low utilization in general. According to another study conducted in south India, television (100%) was the main source of information[12].

The findings indicated that increase in educational level was generally associated with increase in utilization of print media. Post graduates used print media by about 85% (P=0.000). Internet was mostly utilized by college students and post graduates accounting for 41% and 23% (P=0.000) respectively, while people with no education, adult education, primary and middle school level didn't use internet. Community meeting was used by respondents having no education along with respondents of college level by about 18% (P= 0.01); whereas post graduates did not utilize it at all. A study from Iran showed that highly educated people mainly got health information from internet, radio and television[13].

Majority of the participants have received health messages in the last 12 months prior to this study. Regarding the types of messages, respondents have received specific messages about cholera, NCDs, TB, malaria, pregnancy and delivery, diarrhea, child health, and HIV/AIDS, though some other diseases have been mentioned. Those disease specific messages were obtained from television (49.8%), friends and relatives (46.6%), health facility (21.5%), print media (12.5%), radio (11.1%), CHA (5.1%), community meeting (3.5%), e-media (3.2%), peer discussion (2.1%), and internet (1.4%). These results indicate that people give more value to television than other channels and better memorize messages transmitted through it; but, this is true only when each channel is taken separately, otherwise, IPC channels collectively take the lead.

Preference of health message communication channels

As shown in Figure No.3, television (77.1%), radio (54.5%), health facility (54.1%), and print media (35%) were more preferred channels, while community meeting (28%), CHA (26.4%), friends and relatives (18.8%), internet (9.6%), peer discussion (6.7%) and e-media (4.5%) were less preferred sources. However, when channels were grouped into their respective categories, interpersonal channels were more preferred which included health facility (54.1%), CHA (26.4%), friends and relatives (18.8%), and peer discussion (6.7%). Besides, when participants were asked 'Which channel is most important?' 66.9% replied 'television', 10.5% 'radio', 9.2% 'health facility' and 7.3%'print media' Where as a study conducted in US reported that the highest preference was expressed regarding interpersonal channels[14].

This study revealed that there was a significant association between age and preference of health facility (P=0.017) and friends and relatives (P=0.035). Respondents of the age group 36-44 were found to have the highest preference for health facility (69%) and friends and relatives (32.8%). Health facility was the least preferred channel by respondents of the age group 18-26 (40.6%) and friends and relatives was the least preferred channel by respondents of the age group 27-35 (12%).

As indicated in the results of this study, respondents' gender was found to have significant association with preference of print media (P=0.000). This means that females were 0.254 times less likely to prefer print media compared to males (CI=95%, df=1, S.E=0.314, P=0.000). In other words, 62.3% of males and 29.5% of female respondents preferred print media. This may be because males have more probability of reading print materials as they stay outside of their homes for longer hours while females are busy at home.

Occupation was found to have significant association with channel preference for seeking health information (Table No.7). Housewives searched for health information through health facility (22.5%), (P=0.003), television (54.5%) (P=0.04) and print media (100%) (P=0.02). This may be because mothers visit clinics more frequently than men for issues related to pregnancy, delivery and primary care of children. Another associated fact is that they spend most of their time at home and can attend to what they are provided with. Unemployed ones and daily laborers sought for health information only through health facility accounting for 17.5% and 12.5% respectively. Traders and military people used friends and relatives (50% each) as their main channel for health information seeking. Employed respondents used health facility (30%), television (27%) and internet (50%) to search for health information. Students sought health information through peer discussion (100%) and internet (50%). These findings have to be taken into account to link channels with people considering their occupations.

Findings of table 6 have revealed significant association between respondents` preference of most important channels and the reason(s) related to it (P=0.000).

- From those who ranked radio as most important, 91% said, 'because it is easily accessible.'
- Television was chosen as most important because of its attractiveness (62%) and because it is easily accessible (59%). Some also stated that it is interactive and participatory (37%) as well as entertaining (39.5%).
- Health facility was preferred because of its interactive and participatory nature (29%) though other reasons exist.
- Community meeting was also preferred as most important channel because of its interactive and participatory nature (54.5%).
- Print media was chosen as most important channel because it is easily accessible (96%) and entertaining (87%).
- The main reason for internet preference was the fact that it provides new information (80%).
- Community channels were chosen as most important because they were interactive and participatory (100%) and because they used local and understandable language (100%).

- Other reasons for choosing channels as most important were related to reading ability, electricity requirement and reach of channels.

Though it requires further studies, the reasons provided by the respondents gave a good picture of how communication channels should be designed and provided to the public to achieve the desired goals.

Attitude and practice of subjects towards health message communication channels

All of the respondents had positive attitude towards the transmission of health messages, and they thought that it is very crucial in their lives. They wanted to know about risk factors, transmission, prevention and control of diseases.

A small proportion (22.3%) of respondents had a practice of searching for health information before they become sick. Sources used for seeking health information mainly included: health facility, television, print-media and internet. Almost all of the respondents who searched for health information used health facility (P=0.000) and among those, employed respondents had the highest percentage of health facility usage (30%) followed by house wives (22.5%).

The frequency of watching television was 79.9% every day, 14.3% once a week, 1.9% less than once a week, and 3.8% not all. While radio listening was 21.3% every day, 22.3% once a week, 11.1% less than once a week, and 45.2% not at all. Frequency of reading newspaper was 15.9% every day, 31.2% once a week, 18.2% less than once a week, and 30.3% not at all (Table No.4). Whereas, EPHS (2010) stated that 47.4% of respondents from Asmara, read newspaper at least once a week, 82% watched television at least once a week and 52.3% listened to the radio at least once a week[15]. This means the frequency of media exposure was more or less similar to the findings of this study, given that every day and once a week are merged together in EPHS findings.

As Figure No.6 has shown, the summation of the respondents who ranked television as first, second and third was 97.4%, while for radio and print media; it was 76.7% and 73% respectively. However, internet and e-media were ranked as first, second and third by very small proportions of the respondents i.e. 11.7% and 4.1% respectively. This doesn't mean that they are not important as there was lack of equal and representative samples of all the population segments.

S.No	Subzones	Households	Cumulative	Range
1	Abashawl	11,217	11,217	1-11,217
2	Akria	13,361	24,578	11,218-24,578
3	Arbaete Asmara	9,221	33,799	24,579-33,799
4	Edaga hamus	8,680	42,479	33,800-42,479
5	Gejeret	10,311	52,790	42,480-52,790
6	Geza banda	9,550	62,340	52,791-62,340
7	Godaif	11,805	74,145	62,341-74,145
8	Maekel ketema	5,698	79,843	74,146-79,843
9	Maytemenay	6,598	86,441	79,844-86,441
10	Paradizo	8,414	94,855	86,442-94,855
11	Sembel	5,739	100,594	94,856-100,594
12	Tiravolo	5,718	106,312	100,595-106,312
13	Tsetserat	5,884	112,196	106,313-112,196
Total (N)		112,196		

Table No.1: Respondents' socio-demographic characteristics: n=314

S.No	Socio-demographic characteristics	%	Frequency
AGE			
1	18-26	29	91
2	27-35	29.3	92
3	36-44	18.5	58
4	45-53	19.1	60
5	54-62	4.1	13
GENDER			
6	Male	16.9	53
7	Female	83.1	261
EDUCATIONAL LEVEL			
8	No education	5.1	16
9	Adult education	2.5	8
10	Primary	9.2	29
11	Middle	23.9	75
12	Secondary	42.7	134
13	College	12.7	40
14	Post graduate	3.8	12
OCCUPATION			
15	House wife	50.3	158
16	Employed	17.2	54
17	Unemployed	8.9	28
18	Student	8.9	28
19	Daily laborer	5.4	17
20	Trade	5.1	16
21	Military	3.5	11
22	Pensioner	0.6	2

Table No.2: Frequency and percentage of usual sources for health information: n=314

S.No	Usual source of health information	Frequency	Percent
1	Television	278	88.5%
2	Health facility	208	66.2%
3	Radio	113	36%
4	Print media	113	36%
5	Friends and relatives	71	22.6%
6	CHA	36	11.5%
7	Community meeting	32	9.9%
8	Internet	23	7.3%
9	Peer discussion	14	4.5%
10	E-media	10	0.3%

Table No.3: Association between occupation and utilization of channels (P<0.05): n=314

S.No	Occupation	Health facility	Television	Peer discussion	E-media	Internet
1	House Wife	78%	93%	3%	1%	0%
2	Unemployed	68%	68%	18%	7%	4%
3	Trade	56%	75%	0%	0%	0%
4	Daily laborer	47%	88%	0%	0%	0%
5	Employed	61%	91%	6%	6%	19%
6	Military	82%	91%	0%	9%	9%
7	Pensioner	50%	100%	0%	50%	0%
8	Student	21%	86%	7%	4%	39%

Table No.4: Frequency of media exposure of respondents: n=314

S.No	Channel	Every day	Once a week	<Once a week	Not at all	Not able to read
1	Newspaper	50	98	57	95	14
2	Radio	67	69	35	142	NA
3	TV	251	45	6	12	NA

Table No.5: Frequency and percentage of the respondents' reasons for most important channel preference irrespective of communication channels: (n=314)

S.No	Reason for Importance	Frequency	Percent
1	Easily accessible	181	57.6
2	Attractive	138	43.9
3	Interactive and Participatory	97	30.9
4	Entertaining	87	27.7
5	Relevant	56	17.8
6	Has new information	49	15.6
7	Uses local and understandable language	41	13.1
8	Has cultural context	13	4.1
9	Other	37	11.8

Table No.6: Reasons of the respondents for preferring channels as most important (P<0.001): n=314

S.No	Most important Channel	Attractive	Interactive	Accessible	Understandable	New information	Entertaining
1	Radio	6.10%	6.10%	90.90%	15.20%	15.20%	3%
2	Television	62.30%	37.10%	59%	15.20%	17.60%	39.50%
3	Health facility	3.20%	29.10%	9.70%	3.20%	3.20%	0%
4	Print media	13.10%	4.30%	95.70%	8.70%	8.70%	87%
5	Internet	20%	0%	20%	0%	80%	20%
6	Social Media	0%	100%	0%	100%	0%	0%
7	Community Meeting	0%	54.50%	9.10%	0%	0%	0%

Table No.7: Association between occupation and preference of print media, health facility, radio, television and internet (P<0.05): n=314

S.No	Occupation	Health Facility	Radio	Television	Print media	Internet
1	House wife	65.20%	55.10%	73.80%	30.40%	8.20%
2	Unemployed	32.10%	21.40%	58.60%	14.30%	3.60%
3	Trade	8.30%	56.20%	87.50%	62.50%	6.20%
4	Daily laborer	41.20%	52.90%	75.00%	52.90%	0%
5	Employed	53.70%	64.80%	88.00%	42.60%	13%
6	Military	54.50%	54.50%	90.90%	45.40%	0%
7	Pensioner	50%	100%	100%	50%	0%
8	Student	35.70%	60.70%	89.20%	35.70%	28.60%

Table No.8: Association between occupation and channel use for searching health information (P<0.001): n=314

		OCCUPATION								
S.No	**Search Place**	**House wife**	**Unemployed**	**Trade**	**Daily laborer**	**Employed**	**Military**	**Pensioner**	**Student**	**Other**
1	Health facility	22.50%	17.50%	5%	12.50%	30%	2.50%	2.50%	2.50%	5%
2	TV	54.50%	0%	9.10%	0%	27.30%	0%	9.10%	0%	0%
3	Print media	100%	0%	0%	0%	0%	0%	0%	0%	0%
4	Peer discussion	0%	0%	0%	0%	0%	0%	0%	100%	0%
5	Internet	0%	0%	0%	0%	50%	0%	0%	50%	0%
6	Friends and relatives	0%	0%	50%	0%	0%	50%	0%	0%	0%
7	Other	5%	0%	0%	0%	30%	10%	0%	10%	0%

CONCLUSION

The results of this study supported the literature. Generally, it was concluded that combination of channels is necessary for the dissemination of health messages as every channel was accessible to, preferred, and utilized by different segments of the respondents regardless of the magnitude. When the channels were compared, television was the most accessible and most utilized channel followed by radio and print media. Compared to the above channels, internet and e-media were less accessible and less utilized channels. In consistence with accessibility and utilization of channels, television was found to be the most preferred channel (77.1%) followed by radio (54.5%) and health facility (54.1%). Moreover, when the channels were categorized into groups, mass media were the most accessible, preferred and utilized channels followed by interpersonal channels. Community channels were considered as supporters of mass media and interpersonal channels.

RECOMMENDATION

- Professionals, who are engaged in health message dissemination, should apply multi-channel approach.
- Media practitioners and artists should be trained on how to effectively incorporate health messages into their programs/creativities to make health messages more credible.

- Long-term incorporation of health messages into modern communication channels is crucial to satisfy the growing demand of the new generation.
- Health message communication channels and the health messages disseminated should be accessible, attractive, entertaining, and participatory.
- Further large-scale (nationwide) study should be conducted to establish base-line information on the accessibility, preference and utilization of health message communication channels.

LIMITATIONS OF THE STUDY

The major limitations of the study were: budget and time constraints, delays were faced due to unsustainable supply of electricity and lack of internet access, since the target population of this study included only the residents of Asmara, the study results cannot be generalized to the larger population of Eritrea, majority of the study respondents were females as in most household studies and cause and effect relationship could not be established as the study was cross-sectional

ABBREVIATIONS

ACHS: Asmara College of Health Sciences; AIDS: Acquired Immune Deficiency Syndrome; CHA: Community Health Agent; E-media: Electronic media; EPHS: Eritrean Population and Health Survey; HIV: Human Immunodeficiency Virus; IPC: Inter personal communication; MIPS: Malaria Indicator and Prevalence Survey; MOH: Ministry of Health; NCD: Non Communicable Diseases; PPS: Probability Proportional to Size; SD: Standard Deviation; SPSS: Statistical Package for Social Sciences; SRS: Simple Random Sampling; TT: Tetanus Toxoid; US: United States

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CONFLICT OF INTEREST

None declared

AUTHORS' CONTRIBUTIONS

All authors participated in all phases of the study including topic selection, design, data collection, data analysis and interpretation. Samuel contributes to write this manuscript.

AVAILABILITY OF DATA AND MATERIALS

The complete data set supporting the conclusions of this article is available from the corresponding author and can be accessed up on reasonable request.

BIBLIOGRAPHY

1. Ezekiel Babatope Familusi. An Assessment of the use of Radio and other means of information Dissemination by the Residents of Ado-Ekiti, *University of Nebraska-Lincoln,* Ekiti State, Nigeria. 2014.
2. Rajiv Rimal N and Maria Lapinski K. Why health communication is important in public health, *Bull World Health Organ,* 87(4), 2009, 247-247.
3. Healthy People 2010, Understanding and Improving Health, *U.S. Department of Health and Human Services,* 2000.
4. Daniel Catalan-Matamoros. The Role of Mass Media Communication in Public Health, University of Almeria, *Spain,* 2011, 400-414.

5. Eng T R and Gustafson D H. The Emergence of Interactive Health Communication, *Am J Prev Med,* 16(1), 1999, 10-5.
6. Mcdermott, Robert J, Albrecht, Terrance L. Mass Media, *America: Encyclopedia of Public Health,* 2002, 1480.
7. Guidelines for Health Education and Risk Reduction Activities, *CDC,* 1995.
8. Interpersonal communication. Retrieved, *the free encyclopedia,* 2016.
9. Jason Hill H, Sandra Burge, Anna Haring and Richard Young A. Communication Technology Access, Use, and Preferences among Primary Care Patients: From the Residency Research Network of Texas (RRNeT), *America: The Journal of The American Board of Family Medicine,* 2012.
10. Naveena N. Importance of Mass Media in Communicating Health Messages: An Analysis, *IOSR Journal of Humanities and Social Science IOSR-JHSS,* 20(2), 2015, 36-41.
11. Malaria Indicator and Prevalence Surveys, Ministry of Health, Eritrea. Department of Public Health, Communicable Diseases Control division, National Malaria Control Program (NMCP), 2012.
12. Rajeswari Ramachandran, Jaggarajamma K, Muniyandi M and Rani Balasubramanian. Identifying effective communication channels in a rural community: A field report from south India. India, *Indian J. Tuberc,* 53, 2006, 206-211.
13. Amir Alishahi-Tabriz, Mohammad-Reza Sohrabi, Nazanin Kiapour and Nina Faramarzi. Addressing the Changing Sources of Health Information in Iran. Iran.
14. Rockville Pike, Bethesda M D. What predicts the trust of online health information, *U.S. National Center for Biotechnology Information,* 2015.
15. Eritrean Population and Health Survey Report, 2010, *National Statistics Office,* Asmara, Eritrea, 2013.

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