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# LEVEL OF KNOWLEDGE ON PREVENTION OF HYPERTENSION AMONG ELDERLY PEOPLE IN KICUKIRO DISTRICT, RWANDA.

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## ABSTRACT

Hypertension is an emerging public health issue in developing countries Rwanda included. Globally, it is one of the important sources of cardiovascular morbidity and mortality mostly due to changes in lifestyle and increase. It affects all groups, however, the elderly population are the most affected. This study assessed the level of knowledge on prevention of hypertension among elderly people in Kicukiro District. The findings will be useful in planning and developing adequate policies for hypertension prevention. This was descriptive, cross sectional study using quantitative approach. The study population included the adult community members aged between 60 years and above. The target population 7,239 persons and Sample size was 205. Multistage sampling method was used. Data was collected using a questionnaire. Frequency and percentage were used to present and analyze specifically the first and the second objectives. For the third objective, analysis was done using contingency tables. The Pearson chi-square test was used to measure associations of socio demographic between the level of knowledge, attitudes and practices of adult residents in Kicukiro district. Statistical Package for Social Science (SPSS) version 25.0 was used to compute data. About 43.0% were aged 60 to 64 and there were more male respondents (55.1%) compared to their female counterparts (44.9%). The respondents who scored high level of knowledge were 19.0%. Respondents with positive attitude towards prevention of hypertension were 74.6%. The adequate practice on prevention of hypertension was 60.5%. The independent factors associated with adequate practice of hypertension prevention were tertiary education [AOR= 3.64; 95%CI = 1.66-7.23; p value =0.001]; history of medical hypertension [AOR= 3.63; 95%CI = 1.82-7.23; p value < 0.001] and high level of knowledge about hypertension prevention [AOR= 2.73; 95%CI = 1.01-7.39; p value = 0.048]. The study concluded that the level of knowledge was low, however the positive attitude was high. The score on practice was high and the independently factors associated were education, past medical history of hypertension and level of knowledge. The study recommends that population-based studies and intensive health education to raise awareness of the population would help in effective hypertension prevention.

**Introduction**

Globally, hypertension is the top cause of cardiovascular mortality and morbidity with lifestyle change and increase in life expectancy (Fuchs, 2018). In the USA, approximately 76 million and a billion individuals worldwide are affected by hypertension. Annually, hypertension is responsible for over 7 million deaths and it is among the top derivable causes of mortality globally (Rapsomaniki et *al*., 2015).

In China, hypertension has become a challenge to the health of people (Bromfield, 2015). From the year 1975 to 2015, according to the 140/90 mmHg criteria people with hypertension, augmented from 594 million to 1.13 billion. This has been attributed to the aging of populations and rises in prevalence in low and middle-income countries and the average of hypertension declined steadily in high-income countries, with biggest doubt in Eastern and Central Europe, Central Asia, Latin America, the Caribbean, North Africa and the Middle East. In contrast, blood pressure augmented in Oceania, East and South Asia also sub-Saharan Africa (Iqbal & Ahmad, 2012). Its presence is in both developed and middle and low countries, but its frequency differs in diverse racial and ethnic groups (Foex & Sear, 2004). A direct relationship has been proven to exist amid increased risk of cardiovascular blood pressure.

In Africa, hypertension has emerged as a problem to public health. The World Health Organization WHO (2017) reported that, in Africa, more than 30 million persons suffer from hypertension and only half was conscious of their conditions, showing a high burden of uncontrolled and undiagnosed hypertension in these populations (WHO, 2017). The age-standardized prevalence in Africa was at 38.1% in men and 35.5% in women. According to Read et *al*., (2011), hypertension and pre-hypertension prevalence are high and vary by population groups that are well-defined by their position and the prevalence of the degree of their urbanization.

According to Jongen et *al*., (2019), the South African government identifies hypertension as one of the five main illnesses that have to obtain importance and has implemented novel recommendations for the managing of hypertension. Highlighting on implementing active physical participations programs, lifestyle change and overall cardio-vascular risk reduction were suggested by the Hypertension Society of Southern Africa.

In Africa including Rwanda, the shift of many people from rural to urban areas as rendered hypertension an epidemic and with it comes "the burden of civilization" (Akinlua et *al*., 2015). The Rwandan government knows that the problematic of having access to health care for all health conditions, NCDs precisely is not the one health area concern, but also a multi-sectorial defy that requests all areas to push up closely in collaboration in order to offer a full healthcare package with full community contribution (Weeks, 2015). Due to limited resources, health policies concentrate few considerations on non-communicable diseases and neglect the elderly-affected population. According to Devleesschauwer et *al*., (2014), facility-level data in Rwanda and information from the planning workshop ratify that the stroke/TIA, cardiomyopathies, rheumatic and congenital heart disease, the treatment of these medical conditions is "simple" and fairly

inexpensive or avoidable. While some diseases, such as the coronary heart disease, data point out a low burden of disease probable as a consequence of under diagnosing warrant attention as it is an emerging disease escapable through cross cutting tactics.

Previous study conducted among 100 adults aged 27 to 67 years at an urban tertiary education institution in Rwanda showed that 36 respondents were categorized as being hypertensive, giving a crude prevalence of 36%. Of these only 3% were aware of their hypertensive status, about 33% were not aware (Banyangiriki & Phillips, 2013). Assessment of knowledge, attitudes and practices (KAP) on hypertension is a crucial part for its prevention but insufficient information is available from developing countries as well as Rwanda where hypertension has lately been recognized as a key health concern. Therefore, the current study will assess the knowledge, attitude and practices on hypertension prevention among elderly people in Kicukiro district, Rwanda.

**Research methodology**

The research design that was adopted for this study, is the descriptive cross-sectional study using a quantitative approach. A quantitative design is considered as the best method and effective way to investigate or assembling large amounts of information in social and health research. This study was conducted in Kicukiro district because hypertension is more prevalent in urban area.



**Study population and procedure of the study**

This study was conducted in Kicukiro district, Rwanda. The target population was people with and without hypertension (women and men aged 60 to 75 years and above) living in Kicukiro district. The target population 7,239 persons. This proportion represents 2.3% of the whole population of Kicukiro district (318,564 inhabitants).

The study used the Cochran formula, and because of great number of target population of 7239 persons, the Cochran formula resulted 196 as the acceptable minimum, a total of 205 adult residents in Kicukiro district was used as the sample size. The sampling technique was multistage cluster sampling method to determine a proportion of patient to represent the target population.

Before data collection, the researcher held a meeting with two research assistants in order to train them on how to administer the questionnaire and how to work as a team. The participants were free to participate in the study. A systematic explanation was given to the participants about the purpose of the study, main objectives and significance of the study, to obtain written consent from participants. The questionnaire was in Kinyarwanda.

The questionnaires were using a rating scale indicating agree, disagree, strongly agree and strongly disagree. There were two types of questions. Those questions having two possible answers were given 1 point for correct response and zero point for wrong or uncertain response.

The other type of questions had 3 levels of scores, 0, 1, & 2 representing Poor, Fair and Good level of knowledge. The Likert scale of measurement was used to analyze the questions to quantify attitudes of respondents by selecting the appropriate answer on a categorical ordinal scale that is from strongly agree, agree, disagree and strongly disagree. We might code the responses as follows: strongly agree = 1, agree = 2, neutral = 3, disagree = 4, and strongly disagree = 5, If "agree" is the most frequent response to an item, the mode would be the numerical value assigned to that response and calculate a numerical average, or mean value of the coded responses. Each question was labeled with good or bad practice, good practice for 1 and 0 for bad practice.

The structured questionnaire was used to facilitate the researcher in collecting and analyzing data in a form that is presentable. This tool was used to facilitate the respondents in answering questions in a chronologic sequence without giving too many ideas. The developed questionnaire will be separated into sections A and B. Section (A) targeted participants' socio-demographic characteristics comprising district of residence, age, gender, marital status, education, employment. Section (B) focused on knowledge of hypertension.

**Data analysis**

In this research, the quantitative data was collected from the closed-ended questions and cleaned as well as analyzed using Statistical Package for Social Science (SPSS) program version 25.0. Percentages and frequencies were used to analyze the basic characteristics of the respondents as well as the level of knowledge, attitude and practices on hypertension prevention. Moreover, a score assessment was used to assess the knowledge, attitude and practices. Concerning knowledge, 12 items were used and a score of correct response was given '1' while the incorrect response was given '0'. After aggregating the scores and a percentage score was generated and classified as Low knowledge ($\leq$50%), Moderate knowledge (50 – 74%), and High knowledge (75% or above).

**Results**

The results comprises the socio-demographic characteristics of respondents and demonstrate the distributions related to the level of respondents' knowledge on different aspects of hypertension prevention.

**Socio-demographic characteristics of respondents**

The distribution of the socio-demographic attributes of the respondents including age, sex, level of education, marital status, occupation, and medical history of hypertension is presented in Table 1.

**Table 1: Socio-demographic characteristics of respondents**

| Attributes | Frequency (n=205) | Percentage (%) |
|---|---|---|
| **Age** | | |
| 60-64 years | 88 | 42.9 |
| 65-69 years | 73 | 35.6 |
| 70-74 years | 36 | 17.6 |
| 75 years and above | 8 | 3.9 |
| **Sex** | | |
| Male | 113 | 55.1 |
| Female | 92 | 44.9 |
| **Marital status** | | |
| Single | 9 | 4.4 |
| Married | 160 | 78 |
| Divorced/Widow/Widowed | 36 | 17.6 |
| **Continued Table 4.1** | | |
| **Level of education** | | |
| Primary | 128 | 62.4 |
| Secondary | 22 | 10.7 |
| Tertiary | 55 | 26.8 |
| **Occupation** | | |
| Unemployed | 154 | 75.1 |
| Employed | 51 | 24.9 |
| **Weather diagnosed with hypertension** | | |
| Yes | 74 | 36.1 |
| No | 131 | 63.9 |

**Source: Primary data (2021)**



As indicated in Table 1, the highest percentage (42.9%) were aged 60 to 64 years while those aged 75 years and above were only 3.9%. There were more male respondents (55.1%) compared to their female counterparts (44.9%). Most the respondents were married (78.0%) and only 4.4% were single. Regarding to level of education, majority (62.4%) attained primary school and about a quarter (26.8%) had tertiary education while there were only 10.7% with secondary school. As expected, about three quarter (75.1%) of the respondents were unemployed. The study participants were asked about their past medical history of hypertension and 36.1% indicated that they were diagnosed with hypertension.

**Level of knowledge about hypertension prevention**

The descriptive results for the first objective which is to assess the level of knowledge on the prevention of hypertension among elderly people at selected health centers in Kicukiro district is presented in Table 4.2.

**Table 2: Level of knowledge about hypertension prevention**

| Variables | Yes, n (%) | No, n (%) | Don't know, n (%) |
|---|---|---|---|
| Knowing the normal blood pressure | 77(37.6) | 78(38.0) | 50(24.4) |
| Know what hypertension is | 100(48.8) | 54(26.3) | 51(24.9) |
| Family history of hypertension increase risk for getting hypertension | 55(26.8) | 122(59.5) | 28(13.7) |
| Excessive salt intake one of the risks factors for developing hypertension | 143(69.8) | 21(10.2) | 41(20.0) |
| Being overweight a risk factor for getting hypertension | 146(71.2) | 21(10.2) | 38(18.5) |
| Being older a risk factor for hypertension | 65(31.7) | 119(58.0) | 21(10.2) |
| Physical inactivity a risk factor for hypertension | 130(63.4) | 43(21.0) | 32(15.6) |
| Stress can lead to hypertension | 133(64.9) | 23(11.2) | 49(23.9) |
| High cholesterol/fat intake a risk factor for hypertension | 128(62.4) | 29(14.1) | 48(23.4) |
| Know the symptoms of hypertension | 89(43.4) | 53(25.9) | 63(30.7) |
| Management of high blood pressure | 115(56.1) | 29(14.1) | 61(29.8) |
| Knowledge about complications blood pressure | 92(44.9) | 43(21.0) | 70(34.1) |

**Source: Primary data (2021)**

Table 2 shows that 37.6% of the respondents knew the normal blood pressure whereas the remaining (62.4%) did not know what the normal blood pressure is. However, about half (48.8%) knew what high blood pressure means. Most of the respondents (59.5%) did not know whether heredity with hypertension increases the probability of developing hypertension. Only about a quarter (26.8%) knew that family history of hypertension can increase the chance of getting hypertension. However, most of the respondents (69.8% and 71.2%) indicated that excessive salt consumption and becoming overweight are risk factors for developing hypertension respectively.

With regard to aging and hypertension, only 31.7% of the elderly respondents specified that being older is a risk for hypertension while majority (58.0%) indicated that aging is not a risk. On the other hand, most (63.4%, 64.9% and 62.4%) respondents stated that physically inactive, becoming stressed and high cholesterol level can increase the probability of hypertension development respectively. Considerable percentage (43.4%) claimed that they know the signs and symptoms of hypertension and about 44.9% knew the complications of high blood pressure.

**Level of knowledge about hypertension prevention**

The level of knowledge on hypertension prevention among elderly people was assessed with the help of score assessment according to the 12 variables presented in Table 4.2. The correct response was given a score of '1' and incorrect response '0' and the maximum score was twelve and minimum of zero. Then the percentages were generated and classified as low knowledge (<50%), moderate knowledge (50% to 74%) and high knowledge (75% and above). The results are presented in Figure 4.1 below.

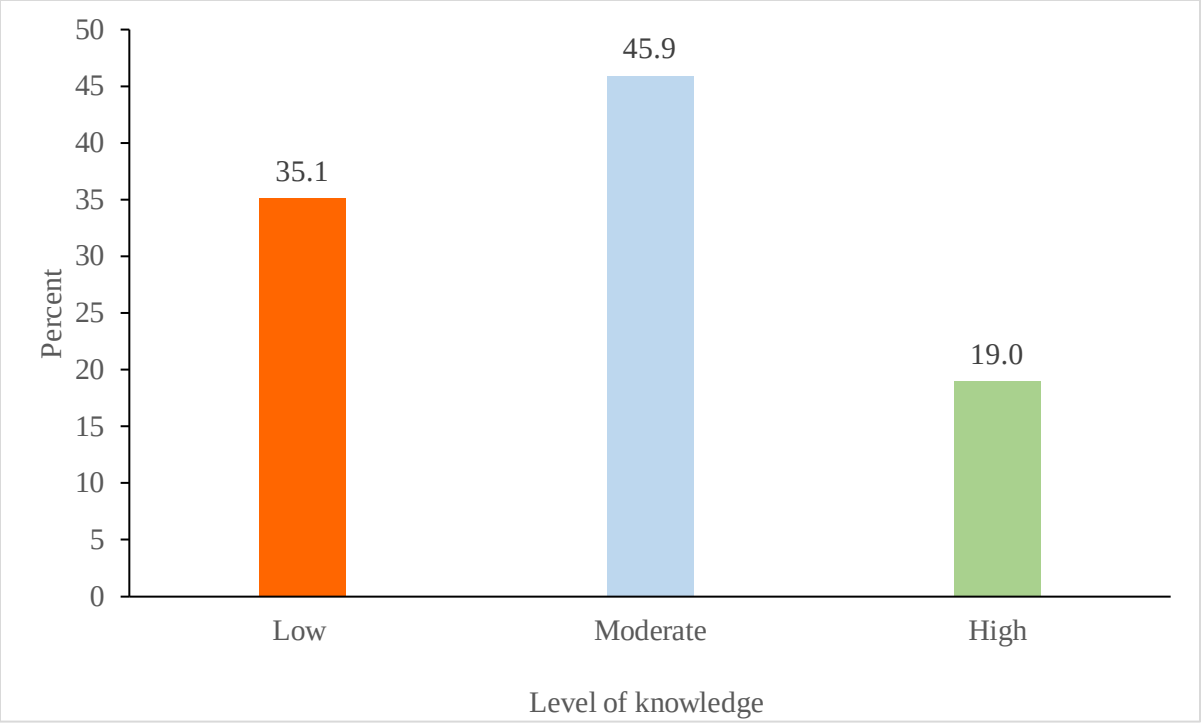


**Figure 1: Level of knowledge on hypertension prevention**

The highest percentage (45.9%) of the respondents had moderate level of knowledge about hypertension prevention and this is followed by those with low level of knowledge (35.1%). Only 19.0% scored high level of knowledge.



**Association between knowledge, attitudes and practices on the prevention of hypertension among elderly people**

The relationship between knowledge, attitudes and practices on the prevention of hypertension is summarized in Table 3.

**Table 3: Association between knowledge, attitudes and practices on the prevention of hypertension**

| Variables | Adequate practice | | In-adequate practice | | $\chi^2$ | Df | p value |
|---|---|---|---|---|---|---|---|
| | n | % | n | % | | | |
| **Level of knowledge on hypertension prevention** | | | | | | | |
| High | 31 | 79.5 | 8 | 20.5 | 8.42 | 2 | **0.015** |
| Moderate | 56 | 59.6 | 38 | 40.4 | | | |
| Low | 37 | 51.4 | 35 | 48.6 | | | |
| **Attitude towards hypertension prevention** | | | | | | | |
| Positive | 94 | 61.4 | 59 | 38.6 | 0.23 | 1 | 0.633 |
| Negative | 30 | 57.7 | 22 | 42.3 | | | |

**Source: Primary data (2021)**

As indicated in Table 3, respondents with high level of knowledge about hypertension prevention were significantly practicing hypertension prevention adequately (p value = 0.015). However, there was no association between attitude and practice of hypertension prevention among the elderly respondents (p value = 0.633).

**Multivariable analysis for predictors of hypertension prevention practice**

Logistic regression was used to identify the independent factors associated with adequate practice of hypertension prevention. The significant variables at bivariate analysis (education, medical history of hypertension and level of knowledge on hypertension prevention) were considered together in a multiple logistic analysis. All independently significantly associated with the adequate practice for hypertension prevention (Table. 4).

**Table 4: Multivariable analysis for predictors of hypertension prevention practice**

| Variables | COR (95%Ci) | p value | AOR(95% CI) | p value |
|---|---|---|---|---|
| **Level of education** | | | | |
| Primary | Ref | | Ref | |
| Secondary | 1.27(0.51-3.19) | 0.605 | 1.06(0.37-3.03) | 0.914 |
| Tertiary | 3.16(1.53-6.55) | **0.002** | 3.64(1.66-7.94) | **0.001** |
| **Weather diagnosed with hypertension** | | | | |
| Yes | 3.20(1.69-6.08) | **<0.001** | 3.63(1.82-7.23) | **<0.001** |
| No | Ref | | Ref | |
| **Level of knowledge on hypertension prevention** | | | | |
| High | 3.66(1.48-9.05) | **0.005** | 2.73(1.01-7.39) | **0.048** |
| Moderate | 1.39(0.75-2.59) | 0.293 | 0.93(0.46-1.87) | 0.831 |
| Low | Ref | | Ref | |

COR= Crude Odds Ratio; CI = Confidence Interval; AOR= Adjusted Odds Ratio

**Source: Primary data (2021)**

Respondents with tertiary education were 3.64 times [AOR= 3.64; 95%CI = 1.66-7.23; p value =0.001] more likely to have adequate practice on hypertension prevention than those with primary education. Respondents with history of medical hypertension had 3.63 times [AOR= 3.63; 95%CI = 1.82-7.23; p value < 0.001] more likely with adequate practice about prevention of hypertension compared to those without history of hypertension. Respondents with high level of knowledge about hypertension prevention were 2.73 times more likely to practice hypertension prevention adequately [AOR= 2.73; 95%CI = 1.01-7.39; p value = 0.048] as indicated in Table 4.

**Discussion**

The purpose of this study was to assess knowledge on prevention of hypertension among elderly people at selected Health Centers in Kicukiro District.

It is of great importance for hypertensive and non-hypertensive patient to discover the KAP level of them to develop the appropriate educational and self-management program. In this regard in the current cross-sectional study the KAP of hypertensive and non-hypertensive was studied. According to results, the level of knowledge was low about the prevention of hypertension. The findings are similar with another study done in Zimbabwe where the level of knowledge of respondents was poor. This was associated with a lack of education (Chimberengwa & Pugie, 2019). This is inconsistent with a study done in Malaysia where the results show that knowledge of the respondents regarding hypertension was good. This might be because almost all of the respondents got much information about hypertension from various sources, such as other people and media (Buang et *al*., 2019). In another studies from Iran, it has been reported that in more 50% of the participants, the knowledge level of participants regarding hypertension was average (Rashidi et *al*., 2018). The discrepancy between studies could result from differences in the educational level using different tools for assessing the KAP level. According to the responses of the respondents in this study, the areas where majority of the respondents could answer correctly were regarding the hypertension risk factors and the diseases associated with hypertension. Majority of the respondents in the present study had high knowledge regarding overweight and stress as risk factors of hypertension. Their answers were consistent with the result of a previous study done in Malaysia (Buang et *al*., 2019).

However, regarding attitude towards the prevention of hypertension, the findings demonstrated that, 74.6% of the elderly participants had positive attitude towards hypertension prevention. This is in agreement with the study conducted in Ethiopia by Saron Bogale et *al*., (2020) which found 66.4% of participants with favorable attitude on prevention of hypertension. However, it is lower than finding of study in Nigeria where almost all (99%) of the study participants had positive attitude (Ike et *al.*, 2010). The discrepancy might be due to the difference in attitude measurement. Moreover, another study conducted by (Fakhri et *al*., 2011) found the patient's attitudes were positive. In Oliveria et al's report less than 50% of hypertensive patients did not accept hypertension as a severe health condition and they agreed that it is inevitable. A view that was also found in similar research in Malaysia, where participants sought to counteract it by taking traditional medicines given the consequences of irregular treatment, the significance of this result was clear.

Regarding the overall practice level of the respondents, about 60.5% had adequate practice on prevention of hypertension. This finding is comparable with study reported from Bishoftu where 61.39% of participants had good practice about management of hypertension (Daniel & Kamal, 2017). However, the finding in this study is higher than study conducted in Ethiopia where only 27.3% of the participants had practiced recommended life style modification. The difference could be due to modification in study setting, sample size, and study period variation between the current study and previous studies. The other reason may be due to difference in level of awareness about hypertension. Comparing this study to previous studies, participants had adequate practice on hypertension prevention regarding their low level of knowledge. This might be due to variation in study period as majority of the participants were from urban. Another reason can be due to an unconscious act without knowing the recommended lifestyle in the management of hypertension. Results on

practices concur with a study conducted in Ethiopia by Bogale et *al*., (2020) in which 83.2% of respondents evidenced they were in regular physical activity. This linked to their educational status. However, our findings is higher than study conducted in South Ethiopia by Buda et *al*., (2017) where 27.3% of the participants had practiced recommended lifestyle modification in the management of hypertension. This could be due to difference in study setting because it was conducted in selected hospitals but the current study is conducted in the community. In this study, level of education showed a significant association with adequate practices. This was further supported by a study conducted in Nigeria by (Abdullahi & Amzat, 2011) where practices were associated to the level of education regarding hypertension. Having formal education can be a cornerstone in increasing the practice of respondents about hypertension. This clarifies, educated clients would have better access to health-related information than non-educated clients. The findings showed a significant association between history of hypertension and practices. This is in contrast to another study done by Telma et *al*., (2013) but knowledge about the significance of physical activity was higher among those older people with higher education and greater income. This means the better the respondents had good understanding toward prevention of high blood pressure, the better they practiced adequately. Research by Hawa et *al*., (2018) exploring knowledge and healthy lifestyle practices found that patients with low knowledge about hypertension were less likely to change their dietary practices compared to those with high knowledge about hypertension. Our rates were also comparable to a study done in Tanzania by Maginga et *al*., (2017) where respondents who had moderate knowledge and adequate practices also had increased odds of control. This means that better knowledge will improve the practice of the respondents.

**Conclusion**

The present study has demonstrated that the majority of the respondents had low knowledge on hypertension prevention. However, attitudes and practices on hypertension were acceptable among the participants. In the main time, one of the cornerstones to achieving positive health behavior towards hypertension is through public education. This study revealed that KAP regarding hypertension were associated with level of knowledge, level of education, medical history of hypertension but not with other socio-demographics characteristics studied. This study has identified numerous concerns that should be addressed in future policies and interventions to improve hypertension management in Rwanda. Further effective health education programs need to be carried out to improve the awareness and knowledge of the community on prevention of hypertension. The Ministry of Health should conduct health promotion campaigns aiming to increase awareness of health information about hypertension to the population. The Ministry of Education should implement school health education curriculum to raise awareness and knowledge that would impact behavioral changes for long-term prevention. School health education should increase basic exposure to hypertension information on risk factors, signs, complications and prevention. Specific training to school health educators should be provided. The government and health policy makers need to assist through public enlightenment campaigns and sensitization programs down to the community level, where awareness and knowledge is poor.

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