Original article

Developing and testing a culturally sensitive health information leaflet on the consequences of alcohol abuse: Rhodes University support staff with limited literacy in focus

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Abstract

Background: Alcohol consumption is one of the main modifiable risk factors that contributeto the global burden of diseases. Alcohol consumption is amongst the fast-growing non-communicable diseases commonly found in low-and middle-income countries. There is therefore a strong need to design and use health education materials that address the problem in these countries.

Objectives: The objective of this study was to develop and test a context-specific and culturally sensitive health information leaflet (HIL) on the health consequences of alcohol abuse. The HIL was intended for use by support staff with limited literacy at Rhodes University. The study was conducted over a period of three months at Rhodes University, Grahamstown, South Africa.

Methods: A HIL was designed using a four-draft process, and then, subjected to readability testing. The testing was carried out using seven readability formulae. This was followed by a quality and suitability assessment using the Suitability Assessment of Materials instrument and the Patient Education Materials Assessment Tool. Five support staff members and nine peer educators were selected from Rhodes University to take part inthe pilot testing and focus group discussions, respectively. Convenience sampling technique was used to select the study participants.

Results: The HIL obtained a readability score of grade 12. This readability score was found to be difficult to read. However, ignoringcertain medical termssuch as *disease* and *numbness*, which were thought to be familiar, enough to the participants may result in more favourable readability scores.

Conclusions: The HIL obtained an average readability score of grade 12, which fell within the target range of this study. A HIL in which care about readability, cultural sensitivity, and the extent of an end-user participation has been taken may improve the reception, by the target audience, of the intended communication. This may eventually enhance the implementation of future health interventions for support staff at Rhodes University. [*Ethiop. J. Health Dev.* 2018; 32(1):46-53]

Keywords:- Alcohol, non-communicable disease, health information leaflet, low literates, readability, culture-sensitive

Introduction

Alcohol consumptionis a major modifiable risk factor influencing the global burden of diseases (1). An increase in the consumption of alcohol arises from industrialisation of the production and globalisation of alcohol marketing. Similarly, aggressive promotion of alcoholic productsleads toalcohol abuse, and this, in turn, has deadly consequences (2). The abundance of the deadly consequencesof the behaviour can be taken as evidence that explains the shifttowards epidemic increases in non-communicable diseases (NCDs) (1). NCDs such as cardiovascular diseases, cancer, and liver cirrhosis are progressively affecting public health on a global scale. Such diseases have excessive health impacts, particularly on populations of low- and middle-income countries (LMICs) (3). This is partly due to the availability of limited health research and development in LMICs. The scarcity of health research, in general terms, raises the burden of diseases (both communicable and non-communicable) (4). Evidence shows that 43% of the total deaths in South Africa are due to NCDs (5). In 2012, alcohol intake resulted in about 3.3 million (5.9%) deaths globally (6). In response to these critical challenges, the World Health Organisation (WHO) drafted a Global Strategy to reduce the harmful use of alcohol (7). The harmful use of alcohol is a public health problem globally, but the WHO website has data available for only three of the six WHO regions, in which Africa is not included (8).

Irresponsible use of alcohol is a major threat to health. This major threat to health isaddressed by Sustainable Development Goal 3 (SDG 3), which comprehensively targets health outcomes. One of such health outcomes isthe prevention and treatment of harmful alcohol use (9). Alcohol consumption leads to alcohol dependence (10). Excessive consumption of alcohol contributes to more than 200 diseases and injuries, including injuries that result from violence and road accidents (10).Other than affecting the health of consumers, alcohol has also significant impacts on the socio-economic situation of a larger community. Unemployment, violence, crime, high risk sexual behaviour, and disruptions of family life and work performances are a few to mention

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among examples of socio-economic consequences of alcohol abuse (11).

An increase in alcohol use leads to a huge risk of contracting sexually transmitted diseases like HIV/AIDS (12).In South Africa, for example, risky drinking behaviour was found to be the most prevalent amongst those from lower economic status and education level (13). About 18% of South Africans have no schooling, 41% have not progressed beyond primary school, 31% have not gone beyond secondary school, and only 20% have completed secondary school (14). South Africa's literacy rate is estimated to be 89% in 15-year-olds and above (15). However, it should be noted that high literacy does not necessarily guarantee high health literacy (16).

Low health literates are vulnerable to serious health disparities and poor health outcomes. This, in turn, leads to higher hospitalization rates and higher care costs. Language barriers further limit access to health care information (17, 18). Health literacy has therefore become an essential requirement in today's world -a world in which the determinants of health haveincreasingly become multifaceted and complex (19).

Along with health literacy, culturealso has an impact on how people understand and respond to educational material (20). Results of tailored interventions that are culture oriented have demonstrated that the acceptability of health promotion activities improves when users are involved and culturally sensitive health education interventions are developed (21). This means that increased participation ofcommunity members in health promotion programs enhances their awareness about their health (22). In other words, health promotion raisesthe awareness of the public to the consequences of irresponsible use of alcohol.The awareness, in turn, enables the people to make informed decisions about themselves and their lifestyle (23). Health promotion also helps to reduce mortality rate and addresses the risk factors and the other underlying determinants of health (24).

In recognition of this need for health education, astudy was conducted at Rhodes University. It aims to develop and test a contextually appropriate and culturally sensitive health information leaflet (HIL) for use by low literates on health consequences of alcohol abuse. (Low literates, in the context of this study, refer to individualswho havelimited competence in reading, writing, and speakingEnglish.) A comprehensive multi-step process was adopted to modify the HIL. In addition, a wide range of methods were used to assess the readability and suitability of the HIL**.**

Material and Methods

Ethical approval: The project received ethical approval from the Rhodes University Faculty of Pharmacy Ethics Committee on the 28th of March 2016 (PHARM 2016-08).

Searching and Accessing HILs: HILs were identified and collected from various sources (25-28). Information obtained from the sources was used to guide the development ofa HIL entitled *The Health Consequences of Alcohol Abuse*. Representative groups of the intended users (Rhodes University support staff and peer educators) were consulted during the design of the HIL.

Evaluating the Readability, Quality, and Suitability of HIL: Readability of the full text of the HIL was assessed using sevendifferent online readability formulae:the Flesch Reading Ease Formula; the Flesch-Kincaid Grade Level; the Fog Scale; the SMOG Index; the Coleman-Liau Index; the Automated Readability Index; and the Linsear Write Formula (29). The quality and suitability of the HIL was assessed using the Suitability Assessment of Materials (SAM)instrument (30) and the Patient Education Materials Assessment Tool (PEMAT) (31).

Peer review: One supervisor, four post-graduate students, and two colleagues at Rhodes University assessed the quality and suitability of the first draft of the HIL. The peers were selected from the Health Promotion team in the Faculty of Pharmacy. Assessment of the material involved using the SAM and PEMAT instruments. Additional comments and suggestionswere also received from peers and used to supplement the main instruments. The SAM and PEMAT scores were compared, and the feedback obtained was used to finalise thesecond draft of the HIL.

Pilot Testing: Five members of the university support staff volunteered to participate in the pilot testing. Participant Information Sheet was used to get the consent of the support staff for participation. The participants were considered to represent the whole semi-literate population of the staff of the university. The volunteered participants signed consent form before their involvement in the pilot study. The purpose of piloting the second draft was to ensure acceptability of the HIL and determine target users' level of comprehension. Interviewing was the instrument used to collect the data needed for the study, and a copy of the HIL and a question guide were used during the interview.

During the data collection process, the participants were asked to identify and circle textsthey did not understand on the HIL, and tocomment on the appropriateness of the illustrations in the HIL. In addition, the participants were asked to comment on whether or not the material was culturally sensitive and the extent of the usefulness of the HIL. They were also asked if relevant points were omitted from the HIL, and for opinions on ways to improve the material before printing and disseminating its final version.

Data analysis started immediately after collection of the data was over. Analysis of the data involved identifying and interpreting remarks made by the

participants about the HIL.The feedback obtained was used to compile the third draft of the HIL. Most of the feedback obtained was similar, and this, made piloting the third draft unnecessary.

Focus Group Discussion: There are forty peer educators at the university. Nine of the forty peer educators volunteered to take part in the Alcohol project. The third draft was presented tothese ninepeer educatorsin a focus group discussion. Feedback from the group was used to edit the draft of the HIL. Thislaststep involved comparing the readability, quality, and suitability of the final version of the HILwith the quantitative findings obtained from discussions of the previous drafts.

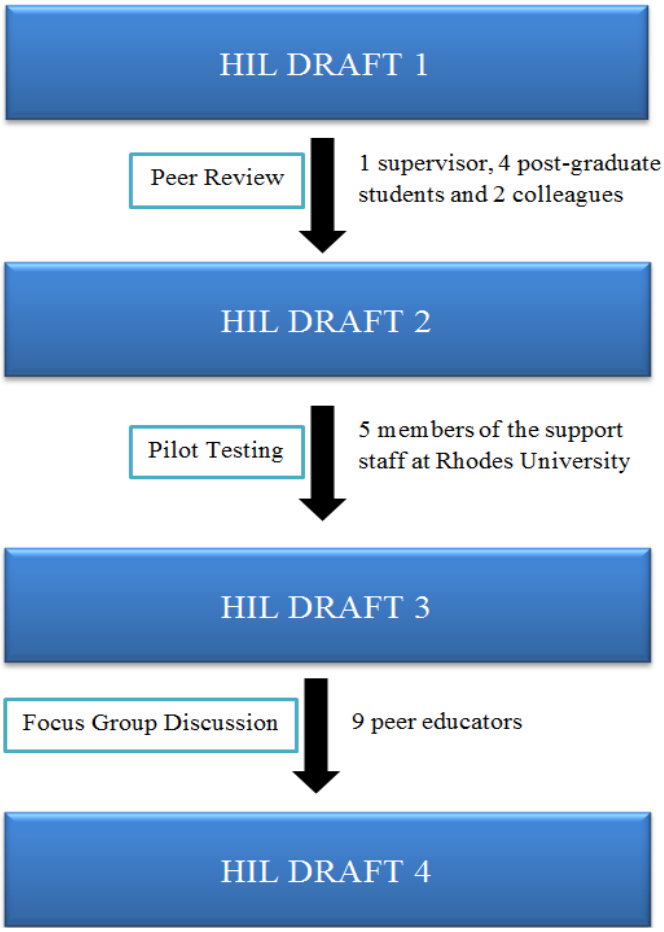

Figure 1: **Flow diagram showing the stages and key influencers to the HIL drafts**

The HILis now ready for a wider dissemination and feedback. The peer educators can use it in the discussions they have with their respective constituencies. They peer educators can reach 1500 support staff over the next six months. The expected regular input will help in making the necessary additions and omissions before finalizing the HIL. The final version of the HIL will be translated into two local languages of the Eastern Cape in South Africa: IsiXhosa and Afrikaans.

Results

Demographics of the participants are represented in Table 1. The educational background of the support staff ranged between grades 10 – 12. IsiXhosa is the language used by all the participants.

Table 1: **Demographics for Pilot Testing of HIL**

Respondent Number	Age	Gender	Education Grade Level	Role at Rhodes University
1	29	Male	Grade 10	Laboratory assistant
2	58	Male	Grade 12	Technician
3	44	Female	Grade 11	Cleaner
4	30	Female	Grade 12	Cleaner
5	58	Female	Grade 10	Cleaner

The stages of the study are indicated on the left, and the key people who influenced the drafts are indicated on the right, as shown in Figure1.

Draft I was modified to draft II after the initial peer review was completed. Twenty-threechanges, including textual and imagery, were made in the process. Two of the twenty-three changes were imagery - one image was replaced with a more suitable one, and another was added to the leaflet. Twenty-one textual changes were made. For example, "Dangerous behaviours which may risk the health of alcohol abusers and others" was rephrased as "Dangerous behaviours such as abusing, drinking and driving". Similarly, "Insomnia, which may be followed by oversleeping" was rephrased as "inability to sleep at times and oversleeping at other times". Another important change made in rephrasing was that"Impotence in men and infertility in women" was rephrased as "inability to have a child".

Draft II was modified to draft III after pilot testing. Eleven changes, including textual and imagery changes, were made. Five of the eleven changes were imagery changes. Five images were added to the leaflet to better illustrate the text. Six textual changes were made. For example: "Numbness and trembling hands" was rephrased as "trembling and loss of sensation of the hands". Other textual changes include: "Ask people close to you to encourage you not to drink alcohol, and to rather do other activities with you" was rephrased and split into two. The first text reads: "Family members and friends can encourage drinkers to stop drinking alcohol,"while the second is: "Do other activities you enjoy and that you think reduce stress".

In connection with the relationship between illustrations and text, one respondentwas quoted saying: 'The pictures helped to explain the text." However, another respondent who said: "One picture requires you to know the body of the human being," seems not to have understood what the pictures illustrated.Most of the respondents agreed that it was easy to read and understand the written information. All found the font size to be big enough to read and the amount text in the HIL to be "about enough".They said the language was easy to understand. However, one respondent said he did not understandmany of the words in the HIL. Another respondent commented that the text was just 'simple' . A similar comment was also obtained from the respondent who said: "The leaflet is written in the language I daily use".

All participants found the HIL to be very helpful. One respondent, in particular, had this to say: "You should make leaflets on alcohol often so that people can stay away from these things." Another respondent suggested: "More of these leaflets should be displayed and practically demonstrated in our environment because most of the people are not well educated or are not informed about the dangers they put themselves in when they abuse alcohol."

Draft III was modified to draft IVafter a focus group discussion was held. In this draft, four textual changes were made. Recommended limits of alcohol were added to the HIL. Peer educators also identified some of the information as unclear in the HIL. One asked, "What does 'To meet the need for alcohol' mean?" In reply, the sentence was changed to 'To meet the need for alcohol (addiction)'.

Another asked, "Do not drink more than the recommended daily limits of alcohol' – What is the limit?" Information regarding the recommended daily limit was thus added.

Peer educators also found this initiative helpful. One of them commented: "This is very interesting, I have learneda lot. This program should not be for us only, but it should be made available toother staff members as well."

The SAM and PEMAT results of the HIL are presented in Table 2.

Table 2: **SAM and PEMAT Results for HIL**

SAM Instrument			**PEMAT**	
Superior	Adequate	Not suitable	Understand ability	Action ability
62.5%	32.5%	5%	84.05%	50%

Results of seven readability tests are presented in Table 3. Based on the seven readability formulae, the results conclude the following:

Grade Level: 12
Reading Level: Difficult
Reader's Age: 17 - 18 years

Table 3: **Readability Results for 7 Readability Tests**

Readability Test	Score	Difficulty / Grade Level of Readability	Optimal Level of Readability
Flesch Reading Ease	46.6 (text scale)	Difficult to read	Grade 6 – 8
Gunning Fog	13.6 (text scale)	Hard to read	Grade 6 – 8
Flesch-Kincaid	12	Grade 12	Grade 6 – 8
The Coleman-Liau Index	10	Grade 10	Grade 6 – 8
The SMOG Index	11.2	Grade 11	Grade 6 – 8
Automated Readability Index	11.2	15 – 17 years old (Grade 10 – 11)	Grade 6 – 8

Discussion

Targeting alcohol abuse, which is one of the four modifiable risk factors of NCDs, is one strategy that can be used to help tackle this epidemic and reducemortality. More importantly, disability and death could be significantly delayed (32, 33). For example, educational interventions can be introduced to raise awareness at community levels. An equally important measure may be engaging community members in activities around alcohol-related problems and providing information on alcohol use (34). Written educational material like HILs may prove useful in any approach to facilitate a change in health behaviour. Evidence has shown that educational materials must be specific to target audience's context (35).

This HIL was designed for use by peer educators to promote health amongst the 1500 support staff at Rhodes University. An end-user participatory approach was adopted in designing the HIL. This means that this HIL was designed with the collaboration of peer educators and support staff of Rhodes University.

Each draft of the HIL was evaluated in terms of quality, readability, and suitability. Based on the feedback obtained during piloting the drafts of the HIL (36), the textual structure and its visual signalling were reformatted. This helped in simplifying complex sentences. The HIL was graded as superior (score of 2) or adequate (score of 1) when assessed using the SAM instrument. This indicated that the content, literacy demands, graphics, layout and typography, and learning stimulation and motivation were suitable for semi-literates. However, in terms of the reading grade level component of the HIL's literacy demand, the HIL was at the reading grade level of grade 10 and above. The SAM instrument is advantageous because it assesses the suitability of written material, and is able to identify specific areas that reduce suitability. A similar study that used the SAM instrument and assessed the suitability of material about prostate cancer had these results to report: Twenty-one percent of the overall suitability of the material was ranked *superior*; 76% was ranked *adequate*; and 3% *unsuitable* (37). The present study used the SAM instrument and achieved similar results.

Assessments were carried out on the first and second drafts of the HIL. Changes suggested by the feedback obtained from the assessment of the drafts were made to the drafts. The drafts have now achieved the desired quality, readability, and suitability. Readability is an important attribute of written educational material (39). In this study, readability formulaewere used in the development and assessment of literacy-sensitive health information (38). Testing the readability of the developed HIL was important since the material was designed forsemi-literate university support staff. Results of readability tests were used to improve the simplicity, clarity, and comprehensibility of the information in the HIL (40).

According to the seven readability formulae used, the HIL was considered difficult to read, as readability levels of grade 10 to grade 12 were obtained. At the material designing phase, the target readability level intended to achieve in the current study was between 10^{th} and 12^{th} grades, as the grade levels of the target population ranged between the two grade levels. The study mentioned earlier in this study used the SMOG test and Flesch-Kincaid (FK) formula and assessed the content, readability, and cultural sensitivity of the material designed for prevention of prostate cancer among older men in the United States (37). This web-based study also used the SMOG test and Flesch-Kincaid (FK) formula, but the finding obtained disagreed with the finding reported in the study carried out in the United States.

In the present study, the SMOG test resulted in a score of 13. This score indicated a reading level of grade 13. The FK formula used resulted in a score of 11. According to FK readability test, a score of 11 indicates a reading level of grade 11. The SMOG score obtained in the study in the United States (37) was higher than the score obtained in the current study. According to Guidry et al. (1998), high reading grades limit the usefulness of materials.

Readability scores may sometimes be high because readability formulae may overestimate the difficulty of the text due to negligence of health-related words such as *disease*, *numbness* and *trembling*, which participants may understand (39). Readability tests assume shorter words are easy to read, and that words with three or more syllables are difficult. This assumption may be misleading when we evaluate health information, as certain medical terms that cannot be substituted will result in a higher readability score. Despite the presence of certain irreplaceable medical terms, some texts may be easy to read and understand (42). This has an important implication for the decision to be made on materials based solely on the feedback yielded by readability test score. This means that not all modifications need to made based on the results obtained from readability formulae. It is thus important

to consider participants' awareness and their contextual knowledge of relevant medical terminology.

Many studies, which used the SMOG for readability testing, resulted in higher scores when compared to other studies, which used the Flesh-Kincaid (FK) readability test. It was also observed that the Flesh-Kincaid readability test resulted in lower scores than other readability formulae. However, the reverse was observed in the case of the current HIL, as the FK results were higher than those of the SMOG test. This further indicates that readability formulae should not be the only tests to be used to assess the literacy demand for educational interventions (37). Results obtained from rigorous end-user testing are important in this regard. Such results can be obtained using contextually and culturally specific material such as the ones used in the present study.

During the pilot testing in the present study, most of the respondents recommended the use of more pictures in the HIL. This shows the importance of illustrations in health promotion. Images create more memorable impacts than texts on readers, and this enhances reader comprehension.

Research in NCDs in high-income countries (HICs) and LMICs can result in mutual advantages in areas with similar findings (4). Africa is the third highest in terms of the level of alcohol consumption, making it vital to address this modifiable risk factor of NCDs in the continent (43). Economic development is dependent on the health of a nation's population and addressing the NCD epidemic is vital to improve public health outcomes as well as national economic growth (32).

Health promotion, through appropriate programmes, is vital to promote healthy lifestyles and prevent chronic illnesses (44). However, health promotion is of limited use if people are not health literate. This means that not much health benefit can be gained from health promotion programmes that are not culturally sensitive to the target population (19). Programmes and interventions that use the language, images, locations, and clothing preferred by the target population are effective in promoting the health of the end-users of the education materials (45,35).

Another study concluded that the effectiveness of health promotion programmes depends on the study, intervention, and population characteristics (46). Health promotion is vital because LMICs have a high burden of diseases as a consequence of alcohol use. Yet, it should be noted that policy implementation levels for reducing alcohol use are poor (9). Populations of LMICs, especially those that lack education, are usually deprived of access to quality health materials. Poor health literacy is one of the primary causes of poor health outcomes, and of health inequalities in LMIC. Tailored health promotion is therefore the key to improving health outcomes in LMICs (47).

Readability, culture-sensitivity, user-friendliness of layouts, and illustrations in the texts enhance the end-users' comprehension of the information presented in printed materials. Target users' proper understanding of the information presented in printed materials empowers them and enhances their involvement in the implementation of health intervention programmes (48). To further improve comprehension and ensure easy reading, HILs must be rigorously tested. In the current study, HIL headings were kept short, list formats such as bullet points were used to optimise ease of reading, and important information was formatted in bold or placed in text boxes to attract attention, as recommended in the literature (36). While the effectiveness in the practice of interventions is not guaranteed, health-related interventions are, nonetheless, the first step towards their implementation.

Limitations

This is a baseline study, which included a small sample size of support staff and peer educators. Unlike the practice in other studies, lack of sufficient feedback from participants was a limiting factor in this study. Critical engagement was not found to be easy with participants of this study - this is truer with the semi-literate support staff of the university considered in the study. This means that generating sufficient inputs to design the HIL that properly suits the target users' needs was a challenging activity faced during data collection. The challenge seems to be more understandable when there are several levels of disparities that arise from differences in culture, age, and language among the end-users of the material.

Conclusions

The HIL obtained an average readability score of grade 12, which was within the target range of this study. Culturally sensitive and context-specific educational materials such as HILs can reduce the literacy barrier. HILs can therefore facilitate the behavioural changes and modify the health beliefs of low literates in LMICs.

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