

# Designing and Validating Written Education Material for Family Health Care Workers and Women of Reproductive Age

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**Received:** 01-Feb-2022,

Manuscript No. AMHSR-22-40590;

**Editor assigned:** 03-Feb-2022, PreQC  
No. AMHSR-22-40590 (PQ);

**Reviewed:** 15-Feb-2022,

QC No. AMHSR-22-40590;

**Revised:** 02-May-2022,

Manuscript No: AMHSR-22-40590(R);

**Published:** 08-Jul-2022,

DOI: 10.54608.annalsmedical.2022.44

## Abstract

**Background:** Written education materials can be used as aids to verbal health education.

**Aim:** This study aimed to develop and validate written educational materials for an educational intervention on vulvo-vaginal discharge.

**Materials and Methods:** The design included need assessment, obtaining information through modified Delphi technique and validation by subject experts and validating by the Family Health Care Workers (FHCWs) and community participants as stakeholders in terms of understanding the contents of the educational materials. The need assessment phase of the study and the first round of the Delphi study assisted in generating the low chart, pamphlet and a book on vulvo-vaginal discharge. The Delphi technique introduced modifications to improve educational materials, with the experts agreeing on the final materials to be validated by FHCWs and community participants.

**Results:** The findings of the first two phases of the study supported the creation of the content of the book, pamphlet and the low chart on vulvo-vaginal discharge in the third phase. The modified Delphi technique and the validation by FHCWs and the community participants assisted in finalizing the educational materials based on the experts' feedback and comprehension assessment of the expected audience.

**Conclusion:** The book entitled "Vulvo-vaginal discharge: A Guide for Family Health Care workers" was designed to improve the knowledge of the FHCWs and their health education activities in the community setting using the developed low chart and the pamphlet which were targeted for the women of reproductive age in the community.

**Keywords:** Delphi technique; Health education; Health personnel; Vaginal discharge; Teaching materials

## Introduction

Knowledge and awareness play a crucial role in an individuals' attitude, behaviour and practice. Health education is considered the solution to improve knowledge and change in attitude, which can contribute to favorable practices/behavioral changes [1]. "Health education traditionally consisted of providing information" [2]. Health education is a systematic planned application, which needs many steps before being implemented. Such as preparing health education materials (informational brochures, pamphlets, and videos), conducting lectures, facilitating role-plays or simulations,

analyzing case studies, participating and reflecting in group discussions, reading, and interacting in computer-assisted training [3].

Within the context of health promotion, health education continues to provide an important preventive strategy [4]. The

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**How to cite this article:** Ilankoon IMPS, et al. Designing and Validating Written Education Material for Family Health Care Workers and Women of Reproductive Age. Ann Med Health Sci Res. 2022;12:184-194.

necessity for consultation and education to promote efficient preventive health behaviour is an important topic in the field of sexual and reproductive health [5]. Reproductive tract infections carry a high economic burden on society [6]. A high prevalence of reproductive tract infections may result in increased rates of secondary infertility [7]. As Vulvo-vaginal Discharge (VVD is one of the most common clinical complaints among women of reproductive age, the effectiveness of treatment carries clinical and economic implications for many less developed countries [8]. Women's health is a fundamental component of development and improvement in the developing world, and it is important to plan interventions to encourage health promotion and behavioural changes [9,10]. Health education on VVD is a primary prevention strategy for improving health-seeking behaviours among women of reproductive age.

Health professionals guide people to modify health behaviours; especially the modification of risk behaviours. Family Health Care Worker (FHCW) appears to be capable of providing health education for different health issues at the community level despite not being trained for different health issues [11]. Health educational activities can be made innovative and creative by using a variety of media to facilitate client education [12]. The most commonly used method of written materials includes booklets, leaflets, information handouts and pamphlets. Using written education materials provides an adjunct to verbal education, and patients can also refer to them when necessary. These educational materials will further enhance participants' knowledge and are found to be responsible for individuals changing their negative health behaviors [13].

Health education materials have been a common mode of health communication among the general public. The development of educational materials involves more than simply writing summarized ideas and distributing them among the audience [14]. It involves assessment of needs of the audience, expert knowledge and comprehension by the population. Effectively written health education materials help the reader to relate new information they learn to their real-life situations [15]. Different tools have been developed to assess the suitability of written health education materials; such as Suitability of Assessment Materials (SAM) criteria [16]. The use of these educational materials as a resource in health education has increased the interactions mediated by health care workers, the client and the family and are found to enhance new possibilities of teaching and learning. The present study aimed at developing and validating educational materials mainly a flow chart, a pamphlet and a book for an educational intervention on vulvo-vaginal discharge focusing on improving awareness in women of reproductive age in the primary health care setting.

## Methods

The present study describes methods of educational material development. It focused on both the knowledge of the target audience and specialists and the validation of the educational materials by an expert panel and community participants.

The proposed method involved five phases: (a) a review of the literature regarding VVD; (b) need assessment of the FHCWs and community; (c) developing the educational material (book, Pamphlet and flowchart on VVD); (d) evaluating the educational material by experts using the Delphi technique; and (e) evaluating by FHCWs and community participants through their understanding of the developed educational materials.

### First phase: A review of literature on vulvovaginal discharge

A review of the published literature on health-seeking behaviours among women related to vaginal discharge was performed and twenty-six eligible studies were reviewed. It was found that women in the reproductive age group are not seeking health advice for their vaginal discharge and consider it as a normal condition due to many cultural factors. The authors suggested conducting culture-specific health education programmes and provide effective health care towards the prevention of consequences of untreated pathological vaginal discharge [17].

### Second phase: Need assessment of the FHCWs and community

The results of the need assessment among community participants show that females of ages between 18 and 49 years living in socially marginalized communities in Sri Lanka required education on reproductive tract infections and related self-care practices [18-20]. Further, FHCWs had shown a need for continuing education and training with regards to VVD and health education [21,22]. Further, it was highlighted that empowering the FHCWs on VVD will be an advantage to improve women's health in community settings. Considering the findings of the need assessment phase of this study, an educational intervention was designed and delivered to the FHCWs [23] and the effectiveness was assessed. The educational intervention was reinforced by educational materials such as a book, pamphlet and a flowchart on VVD. This article mainly discusses the development and evaluation of educational materials used in the educational intervention.

### Third phase: developing the educational materials (flowchart, book, and pamphlet)

#### Flow chart on vulvo-vaginal discharge

A flow chart was developed for the use of FHCWs as a guide for health education on VVD at the community level. It was modified and improved with expert opinions. The flow chart is a summary of the normal and abnormal VVD and the causes. The size of the flow chart was 30 cm × 42 cm (11.81" × 16.53") and printed on a laminated board. It has pictures and can be used to support health education activities at the clinic and the field as well as be displayed in the clinic for self-learning by the community [24].

#### Book on vulvovaginal discharge

A book was written by the authors for the use of FHCWs as reading material (Figure 1: cover page). This was done after

an extensive review of the literature regarding VVD. This was subsequently validated by a panel of experts who were knowledgeable regarding the management of VVD and health education. The book development focused on both the knowledge of the target audience (FHCWs) and the validation of the educational materials by an expert panel and FHCWs [14].

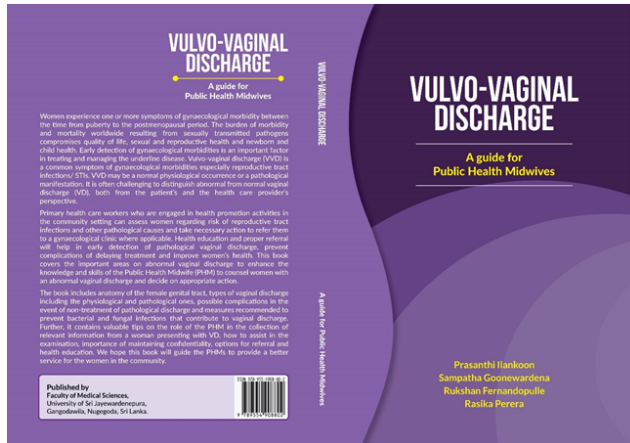


Figure 1: Book cover page.

The book consisted of chapters on introduction, the importance of updating knowledge on VVD, anatomy and physiology of the female reproductive system, VVD and causes for excessive vaginal discharge, possible consequences of untreated pathological VVD, general measures and non-medical management options for a woman complaining of abnormal VVD (prevention of vaginal infections, history taking/assessment of a woman with abnormal VVD, assist in the examination of a woman presenting with abnormal vaginal discharge and health education (features of a good health educator, planning a health education session, developing teaching aids.

The book is an 84 pages (A5 size, visually attractive resource replete with colour illustrations and set in large print with overview summaries at the beginning of each chapter. It has tables, illustrations and detailed instructions for a FHCW to utilize in the health education activities and management of a woman complaining of VVD. This book will assist FHCWs to improve the health education activities for women on VVD and decrease the need for FHCWs to search for resources to find answers to their common questions on the topic.

The pamphlet on vulvovaginal discharge (Figures 2 and 3).

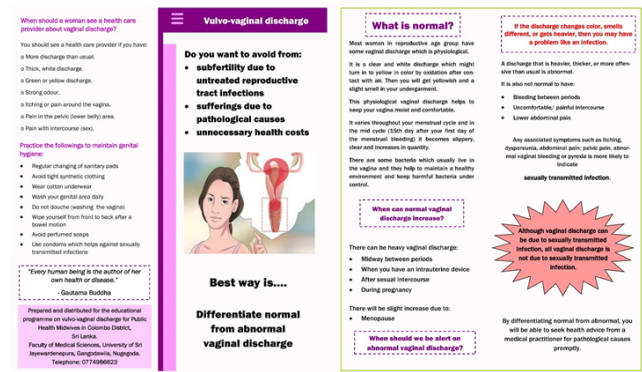


Figure 2: Pamphlet on vulvo-vaginal discharge (first page).

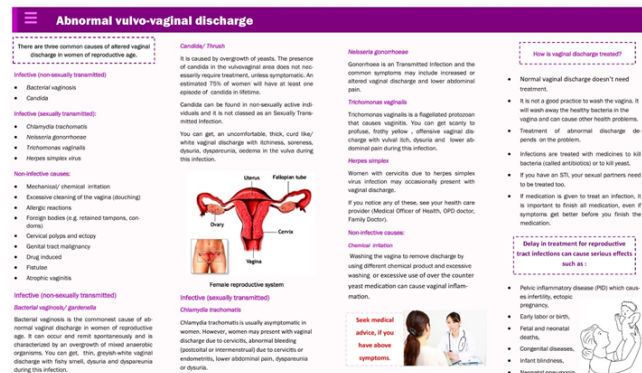


Figure 3: Pamphlet on vulvo-vaginal discharge (second page).

The educational materials developed by health professionals are recommended as a reinforcement tool for verbal communication [25]. A pamphlet was developed by the authors for the use of FHCWs as a guide for community health education and as a self-learning material for the community which can be distributed among females in the reproductive age group for self-learning purposes.

“The Health Belief Model states that an individual's preparedness to engage in the desired health behaviour is related to the perceived severity of the related disease, their perception of personal susceptibility to the disease and the perceived trade-off between the costs and benefits associated with engaging in the behaviour” [26]. This was considered while developing the pamphlet on VVD for public health education. The content was added to the pamphlet incorporating details on the severity of the disease, the risk groups, emphasizing the benefits of engaging in the desired behaviour and minimizing the costs (money, time, side effects) to achieve the desired behavioral change. The pamphlet consisted of details on the VVD including normal and abnormal vaginal discharge, common causes of altered vaginal discharge in women of reproductive age, treatment, consequences of delay in treatment for reproductive tract infections, practices for good genital hygiene.

Further, the evidence-based guidelines for writing easy-to-read patient education materials developed by different institutions “Simply Put: A Guide for Creating Easy-to-Understand Materials” by the Centers for Disease Control,



[27] “How to Create Effective Written Patient Learning Materials” by McGill University Health Centre Standards for Developing Effective Written Patient Learning Materials, [28] and “Easy to Write? Creating Easy-to-Read Patient Education Materials” by the national director of public education for The Leukemia and Lymphoma Society in White Plains, New York [29] were used in developing educational materials. These guidelines and expert advice were used to modify the pamphlet by improving the readability, structure, and presentation for females with low health literacy [30]. It was prepared in English and translated to Sinhala and Tamil languages by bilingual subject experts.

#### Fourth phase: evaluating the educational material by specialists using the Delphi technique

Experts’ opinions regarding the content of the book, flow chart and pamphlet were obtained by the modified Delphi technique. It is a widely used and accepted method for gathering data from respondents within their domain of expertise [31]. Panellists for the Delphi technique included a Gynaecologist, a Consultant Community Physician, a General Practitioner, and two Health Education Officers. Three evaluation rounds using the Modified Delphi Technique were used to get the expert opinions on the developed educational materials. The review forms were assessed and for each statement, agreement above 70% of the reviewers was accepted as it is and below 70% was discussed and revised. This was assessed qualitatively and based on the results the final version of the book; flow chart and pamphlet were developed.

#### Fifth phase: evaluating the educational materials by FHCWs and community participants

Evaluation of the book by the FHCWs

The book entitled “Vulvo-vaginal discharge: A Guide for Family Health Care workers” was reviewed by a panel of experts and a reading comprehension assessment was done among 42 FHCWs. A checklist was developed by modifying an instrument used for reading comprehension assessment by [14] and considering SAM criteria [16]. This checklist, containing 30 items, was divided into the following categories: content, organization, writing style, appearance, motivation and cultural appropriateness [16]. The checklist had a five-point Likert scale (totally disagree, disagree, no idea, agree and totally agree). The book was developed in English and translated to the Sinhala language by a bilingual subject expert and published in both languages (ISBN 978-955-4908-80-2).

#### Evaluation of the pamphlet by the community participants

The same expert panel validated the pamphlet and then a reading comprehension assessment of the pamphlet was done by using a convenience sample of 50 females who were 18 to 49 years of age living in the Colombo Municipal Council area (CMC) who were able to read Sinhala or Tamil languages. Hertzog (2008) recommended a sample size of 10-20% of the intended intervention study for a pilot study [32]. A total of 476 females are intended for the non-randomized controlled trial of the present study. Therefore, a sample size of 50 was appropriate to validate the pamphlet. The pamphlet was given to the group of females and asked to go through it. After reading and viewing the pamphlet, the women were asked to answer a checklist for evaluation of the pamphlet on vulvo-vaginal discharge. The checklist consisted of 30 statements developed based on the SAM criteria [16]. The rating was a Likert scale and containing five points (totally disagree, disagree, no idea, agree and totally agree) [14].

#### Ethical considerations

Permission to conduct this study was obtained from the Chief Medical Officer of Health of CMC. Recruitment of all participants was strictly voluntarily and informed written consent was obtained. Ethical clearance (ERC No: 39/16) was obtained from Ethics Review Committee, Faculty of Medical Sciences, University of Sri Jayewardenepura, Sri Lanka and the study have been carried out following the Code of Ethics of the World Medical Association (Declaration of Helsinki).

#### Data analysis

Data were analyzed using SPSS software (version 20). Descriptive statistics were applied to obtain percentages and means with Standard Deviation.

## Results

#### Evaluation of the Book by FHCWs

The book was evaluated by 42 FHCWs for its content, organization, writing style, appearance, motivation and cultural appropriateness. The mean age of the FHCWs was 34.07 ( $\pm$  8.84) years and the mean duration of the service was 8.02 ( $\pm$  7.99) years. All the participants were Sinhalese and had a basic midwifery certificate (Table 1).

Table 1: Socio-demographic characteristics of participants (n=42)

Variables	n (%)
Age in completed years (mean $\pm$ SD)	34.07 ( $\pm$ 8.84)
Number of years of service (mean $\pm$ SD)	8.02 ( $\pm$ 7.99)
Marital status	Single 11 (26.2)

	Married	30 (71.4)
	Separated/ Widowed	1 (2.4)
Ethnicity	Sinhalese	42 (100.0)
Religion	Buddhist	39 (92.9)
	Christian	3 (7.1)
Highest Professional Qualifications	Basic Midwifery Certificate	42 (100.0)

For the content of the book, a majority (73.8%) strongly agreed that ‘purpose is evident, summaries are included’ and ‘key messages are given in different words with examples and visuals’. Nearly 81% strongly agreed that ‘it is suitable

for use by any professionals involved in improving women’s healthcare’ and ‘it is helpful during the fieldwork and clinic activities’ (Table 2).

**Table 2: Evaluation of the book –FHCWs’ opinion (n=42)**

		Totally agree n (%)	Agree n (%)	No idea n (%)	Disagree n (%)	Totally disagree n (%)
Content	Purpose is evident.	31 (73.8)	11 (26.2)			
	The book explains what to do, what not to do.	20 (47.6)	22 (52.4)			
	The content is informative and interesting to read.	25 (59.5)	17 (40.5)			
	Key messages are given with examples and visuals.	31 (73.8)	11 (26.2)			
	It is suitable for use by any professionals involved in improving women’s health care.	34 (81.0)	8 (19.0)			
	Helpful during the field work and clinic activities.	34 (81.0)	8 (19.0)			
Organization	The title on the cover page is self-explanatory.	25 (59.5)	15 (35.7)	2 (4.8)		
	Topics follow an order.	27 (64.3)	15 (35.7)			
	There is coherence between the information in the cover, presentation and summary.	27 (64.3)	14 (33.3)	1 (2.4)		
	The material used (paper, printing) is suitable.	27 (64.3)	15 (35.7)			
	The number of pages is adequate.	26 (61.9)	16 (38.1)			
	The themes portray important key aspects.	26 (61.9)	16 (38.1)			
Writing Style	The text is lively and interesting.	29 (69.0)	13 (31.0)			
	The tone is friendly.	26 (61.9)	15 (35.7)	1 (2.4)		

	Vocabulary is easily understood.	28 (66.7)	14 (33.3)	
	The text clearly addresses the topics	29 (69.0)	13 (31.0)	
	The text is clear.	30 (71.4)	12 (28.6)	
	The writing style corresponds to the level of knowledge of the target audience.	25 (59.5)	16 (38.1)	1 (2.4)
Appearance	Pages or sessions appear organized.	27 (64.3)	14 (33.3)	1 (2.4)
	The illustrations are simple.	28 (66.7)	14 (33.3)	
	The illustrations serve to complement the texts.	27 (64.3)	15 (35.7)	
	The illustrations are expressive and sufficient.	27 (64.3)	15 (35.7)	
Motivation	The material is appropriate for FHCWs.	35 (83.3)	7 (16.7)	
	The material is presented in a logical manner.	28 (66.6)	13 (31.0)	1 (2.4)
	The interaction is invited by the text. Suggests actions.	22 (52.4)	19 (45.2)	1 (2.4)
	The material provides adequate knowledge to the FHCWs.	33 (78.6)	9 (21.4)	
	Promotes behavior and attitude change.	30 (71.4)	12 (28.6)	
	The material helps the FHCWs to update their knowledge and health education practices.	31 (73.8)	11 (26.2)	
Cultural appropriateness	Central concept of the book is culturally appropriate.	24 (57.1)	17 (40.5)	1 (2.4)
	Images and examples present in a culturally positive way.	27 (64.3)	14 (33.3)	1 (2.4)

More than sixty per cent of the participants (64.3%) strongly agreed that ‘the topics in the book follow an order’, ‘there is coherence between the information in the cover, presentation and summary’ and ‘the material used (paper, printing) is suitable’. Writing Style was reviewed as the text is lively and interesting (64.3%), vocabulary is easily understood (66.7%), the text addresses the topics (69%) and the text is clear (71%). The majority of the participants strongly agreed with the appearance of the book as the illustrations are simple (66.7%), complement the texts (64.3%) and expressive and sufficient (64.3%). The majority of the participants strongly

agreed that the material is, appropriate for FHCWs (83%), provides adequate knowledge to the FHCWs (78.6%), helps the FHCW to update their knowledge and health education practices (73.8%) and promotes behaviour and attitude change (71.4%).

Cultural appropriateness was empathized by strongly agreeing to the statements, the central concept of the book is culturally appropriate (57.1%) and images and examples present in a culturally positive way (64.3%). Because of the lack of dissenting comments on any topic, no subsequent alterations were made to the book.

### Evaluation of the Pamphlet by Community Participants

A pamphlet was developed to facilitate FHCWs' health education activities. The pamphlet was validated among a convenience sample of 50 women who were 18 to 49 years old living in the CMC area for its content, organization, writing style, appearance, motivation and cultural appropriateness.

More than half of the women who participated in the study were Sinhalese (52%) and Buddhist (54%). The mean age of the participants was 32.74 ( $\pm 7.73$ ) years. Further, 58% of the participants were having a primary education level and self-defined themselves to be able to read and write (Table 3).

**Table 3: Socio-demographic characteristics of participants**

Variables		n (%)
Duration of living in urban slum community (mean $\pm$ SD) years		16.52 ( $\pm 12.23$ )
Age (mean $\pm$ SD) years		32.74 ( $\pm 7.73$ )
Marital status	Single	1 (2.0)
	Married	49 (98.0)
Ethnicity	Sinhalese	26 (52.0)
	Muslim	9 (18.0)
	Tamil	15 (30.0)
Religion	Buddhist	27 (54.0)
	Hindu	9 (18.0)
	Christian	5 (10.0)
	Islam	9 (18.0)
Highest level of education	Primary education	29 (58.0)
	G.C.E. O/L	15 (30.0)
	G.C.E. A/L	16 (12.0)
Employment status	Yes	3 (6.0)
	No	47 (94.0)
Type of your family	Nuclear	19 (38.0)
	Extended	20 (40.0)
	Joint	11 (22.0)
Having children	Yes	41 (82.0)
	No	9 (18.0)

In analyzing each category of the checklist, the following percentages were obtained. For the content of the pamphlet, the majority strongly agreed that it is suitable for use by

women in the community setting (82%) and it helps improve knowledge on vaginal discharge (70%) (Table 4).

**Table 4: Evaluation of the pamphlet on "vulvo-vaginal discharge:"- community participants' opinion (n=50)**

		Totally agree	Agree	No idea	Disagree	Totally disagree
		n (%)	n (%)	n (%)	n (%)	n (%)
Content	Purpose is evident.	33 (66.0)	17(34.0)			
	The pamphlet explains what to do, what not to do.	26 (52.0)	24 (48.0)			

Organization	The content is informative and interesting to read.	31 (62.0)	19 (38.0)	
	Key messages are given with examples and visuals.	36 (72.0)	14 (28.0)	
	It is suitable for use by women in the community setting.	41 (82.0)	9 (18.0)	
	Helpful in improving knowledge on vaginal discharge.	35 (70.0)	15 (30.0)	
	The title on the first page is self-explanatory.	26 (52.0)	20 (40.0)	4 (8.0)
	Topics follow an order.	30 (60.0)	18 (36.0)	2 (4.0)
	There is coherence between the information in the cover, presentation and summary.	30 (60.0)	19 (38.0)	1 (2.0)
	The material used (paper, printing) is suitable.	29 (58.0)	21 (42.0)	
	The number of pages is adequate.	26 (52.0)	22 (44.0)	2 (4.0)
	The themes portray important key aspects.	29 (58.0)	19 (38.0)	2 (4.0)
Writing Style	The text is lively and interesting.	28 (56.0)	18 (36.0)	4 (8.0)
	The tone is friendly.	26 (52.0)	23 (46.0)	1 (2.0)
	Vocabulary is easily understood.	29 (58.0)	21 (42.0)	
	The text clearly addresses the topics	32 (64.0)	18 (36.0)	
	The text is clear.	30 (60.0)	20 (40.0)	
	The writing style corresponds to the level of knowledge of the target audience.	27 (54.0)	20 (40.0)	3 (6.0)
Appearance	Pages or sessions appear organized.	30 (60.0)	19 (38.0)	1 (2.0)
	The illustrations are simple.	31 (62.0)	19 (38.0)	
	The illustrations serve to complement the texts.	32 (64.0)	18 (36.0)	
	The illustrations are expressive and sufficient.	32 (64.0)	18 (36.0)	



Motivation	The material is appropriate for women in the community setting.	37 (74.0)	12 (24.0)	1 (2.0)
	The material is presented in a logical manner.	29 (58.0)	19 (38.0)	2 (4.0)
	The interaction is invited by the text. Suggests actions.	23 (46.0)	26 (52.0)	1 (2.0)
	The material provides adequate knowledge to the women in the community setting.	33 (66.0)	15 (30.0)	2 (4.0)
	Promotes behavior and attitude change.	32 (64.0)	16 (32.0)	2 (4.0)
	The material helps the women in the community setting to identifying abnormal vaginal discharge and seek medical advice where necessary.	33 (66.0)	17 (34.0)	
Cultural appropriateness	Central concept of the pamphlet is culturally appropriate.	26 (52.0)	23 (46.0)	1 (2.0)
	Images and examples present in a culturally positive way.	28 (56.0)	19 (38.0)	3 (6.0)

More than fifty per cent of the participants strongly agreed that the topics in the pamphlet follow an order (60%), there is coherence between the information in the cover, presentation and summary (60%) and the material used (paper, printing) is suitable (58%). Nearly 60% of the participants strongly agreed that ‘vocabulary is easily understood’ (58%), ‘the text addresses the topics’ (64%) and ‘the text is clear’ (60%).

The majority of the participants strongly agreed with the appearance of the pamphlet as the illustrations are simple (62%), serve to complement the texts (64%) and are expressive and sufficient (64%). Further, more than sixty per cent of the participants strongly agreed that the material is appropriate for women in the community setting (74%), promotes behaviour and attitude change (66%) and helps the women in the community setting to identifying abnormal vaginal discharge and seek medical advice where necessary (64%).

Cultural appropriateness was empathized by strongly agreeing to the statements central concept of the pamphlet is culturally appropriate (52%) and images and examples present in a culturally positive way (56%). None expressed total disagreement. Because of the lack of dissenting comments on any topic, no subsequent alterations were made to the pamphlet.

## Discussion

Educational materials included in the present study were a book, flow chart and a pamphlet on VVD. All these educational materials were developed based on different guidelines, books and the results of the need assessment phase of the study.

Using written education materials such as booklets, pamphlets and leaflets provide an adjunct to verbal education, and patients can also refer to them when necessary [12]. These educational materials enhance individuals’ knowledge, helping them to change their negative health behaviours [33]. Preliminary assessment about the target audience’s current level of knowledge and their feelings and understandings is undeniably important when developing educational materials [14]. Hence, the present study involved assessing the community and FHCWs needs before the development of the educational material.

Hoffmann and Worrall (2004) have categorized the features to be focused on when designing written materials into six categories, namely, content, language, organization, layout and typography, illustrations and cover and learning and motivation [15]. The researchers highlight the importance of considering readability levels, using short sentences and the use of common words. Pilot testing is crucial before the

written educational material is put into use. Further, according to Griffin, McKenna and Tooth (2003) readability of written material which covers the content of the information provided, the patient's reading ability or literacy level, and its layout and design are important features to be considered [12]. "A person's ability to read written information is determined by his or her level of literacy". Education materials written in shorter and simpler language rather than in advanced language were more beneficial for both high literate or low literate patients. Hence, these features were considered while developing the educational materials for the present study.

It is postulated that the book and the flow chart would help the FHCW to be more independent concerning the information on VVD and health education. In addition, the pamphlet gives a clear understanding of the causes, consequences and healthy hygienic practices. The presence of a printed pamphlet would assist the entire family, which in return could lead to better implementation of lifestyle change and health-seeking behaviour for abnormal vaginal discharge. Using reading materials will be useful as a distance education component for health care workers as well as to the community; they can learn at their own reasonable pace.

Similar procedures of developing and validating the book, pamphlet and flow chart of the present study have been followed by Sousa and Turrini (2012) in their study on creating and validating educational material for patients undergoing orthognathic surgery. As far as the assessment of a book of this nature is concerned, it is important to consider the feedback from the experts and readers. However, there is no standardized way of evaluating agreement during the judging panel validation process. According to Sousa and Turrini (2012), some studies use qualitative evaluation, while others choose a quantitative method with no defined standards. In the present study, 70% or higher agreement which has been considered as satisfactory by other researchers was taken as agreement by the expert panel [14].

The effectiveness of educational material depends on the use of the information by the target audience to positively influence their health status [33]. Effectiveness is achieved by testing the validity and readability before the use of educational materials in research studies. SAM criteria, which assess 22 items grouped under six factors (content, literacy demand, graphics, layout and typography, learning stimulation and motivation, and cultural appropriateness) can be utilized to assess the suitability of written health education materials [12,16]. Similar to the present study, in many studies, the SAM criteria has been used as a guide to developing assessment checklists [14,25].

In the present study, the book was distributed among 42 FHCWs for feedback, and the majority of the FHCWs strongly agreed that the content, organization, writing style, appearance, motivation and cultural appropriateness of the book was good. The pamphlet was given to a group of females in the community to assess their reading comprehension, as it was done in the study by Sousa and

Turrini (2012) in which the educational booklet had been given to 20 patients who had undergone orthognathic surgery [14]. However, the majority of the females in this study strongly agreed that the content, organization, writing style, appearance, motivation and cultural appropriateness of the pamphlet was good, and then it led to the final version of the pamphlet.

Promoting health education to improve patients' understanding of their health and health-seeking behaviors and practices is the main role of a health professional [12]. It has been discovered that health education during the patients' waiting time at the clinic promotes the patients' knowledge and cognition, as well as self-management skills [34]. The "Alma Ata declaration" designated "education concerning prevailing health problems and the methods of preventing and controlling them" the first of eight essential elements of primary health care [35].

Researchers have expressed that the effectiveness of pamphlets can be increased by selecting high-risk groups rather than the general population, using pamphlets to target knowledge and attitude change as a step toward behavioral change, using pamphlets in addition to other interventions, incorporating behavioral strategies in pamphlet design and evaluating the effectiveness of the pamphlet [26].

Effectively written health education materials help the reader to relate new information they learn to their real-life situations [15]. Professional opinion is essential in the development and validation process, as the target audience's opinions are based on their individual experiences and difficulties and being ignorant to such elements could lead to key information being omitted. Thus, both expert and the target audiences' opinions were considered in the present study. Researchers have used the Delphi technique to create the draft of the booklet, and afterwards, the educational material has been validated by the patients through reading comprehension [14].

The use of the modified Delphi technique to create the book, flow chart and pamphlet on VVD starting with the experts and including the needs of the audience presented a satisfactory outcome. The educational materials developed in this study will assist health care personnel to improve their health education on vulvo-vaginal discharge and improve health-seeking behaviors of the community towards abnormal VVD.

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