

DEVELOPMENT, VALIDATION AND USE OF EDUCATIONAL MATERIAL ON THE CORRECT STORAGE OF MEDICINE

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ABSTRACT: Current methodological study analyzes the construction of printed educational material (PEM) on the correct storage of medicine at home and its validation by 50 users of health service and 52 health professionals/judges. PEM deals with the correct storage of medicine, gradation risks, inefficaciousness and accidental intoxication. Validation of contents was established by Level Content Validity Index (CVI) higher than 0.8 for health professionals/judges who evaluated relevance of data, clarity, text comprehension and illustrations and applicability of the matter. Users analyzed PEM with regard to the parameters appearance, motivation, contents and written organization. All items were considered to be relevant by the evaluators, with mean CVI at 0.96 and 0.94 among health professionals/judges and users respectively. Validated PEM was employed in activities for health promotion as a highly relevant, technical and accessible tool for conscience-awareness on the correct storage of medicines.

KEY WORDS: Drug storage; Health education; Health promotion; Validation study.

DESENVOLVIMENTO, VALIDAÇÃO E UTILIZAÇÃO DE MATERIAL EDUCATIVO SOBRE ARMAZENAMENTO CORRETO DE MEDICAMENTOS

RESUMO: Estudo metodológico de construção de material educativo impresso (MEI) sobre armazenamento correto de medicamentos nos domicílios e validação por 50 usuários dos serviços de saúde e 52 juízes – profissionais da área de saúde. O MEI aborda a maneira correta de armazenar medicamentos, riscos de degradação, ineficiência e intoxicação acidental. A validação de conteúdo foi estabelecida a partir do *Level Content Validity Index* (CVI) maior que 0,8 para juízes, os quais avaliaram a relevância de informações, clareza, compreensão de texto e ilustrações e aplicabilidade do material. Os usuários analisaram o MEI quanto aos parâmetros de aparência, motivação, conteúdo e organização escrita. Todos os itens foram considerados relevantes pelos avaliadores e o CVI-médio entre juízes foi de 0,96, e entre os usuários, de 0,94. O MEI validado foi utilizado em ações de promoção da saúde apresentando-se como uma ferramenta altamente relevante, técnica e acessível para conscientização sobre o armazenamento correto de medicamentos.

PALAVRAS-CHAVE: Armazenamento de medicamentos; Educação em saúde; Estudos de validação; Promoção da saúde.

INTRODUCTION

Medicines are pharmaceutical products, technically obtained or prepared for prophylactic, curative, palliative and diagnostic aims¹. The commonest drugs, such as analgesics, antipyretics, antibacterial, anti-inflammatory², anti-hypertensive, oral hypoglycemic and diuretics³, are usually stored in the homes. It is believed that, besides the need of pharmacological treatment, self-medication, prevention, easiness in acquiring them and media propaganda contribute towards the high prevalence of home-stored medicines detected in several Brazilian municipalities^{3,4}.

Easiness to drug access with prescriptions⁵ and problems related to accidental intoxication⁶ or intoxication due to incorrect storage in the home are important issues in public health. Storage quality and expiring date of drugs determine their efficaciousness and safety¹. Storage in an aired and safe place, in the dark, far from heat or humidity are required for the stability of the medicines, besides keeping them in their original packaging which is characterized by the identification of their commercial or generic name, active principal, expiring date and batch number⁵.

Further, a research in the city of Santa Maria RS Brazil, evidenced that incorrect storage of medicine by health users was 80% higher among those who reported they had never received any information on the theme. Lack of information in the community and the need to spread relevant information among the population are important issues for health educational practices⁴.

The awareness of people with regard to the correct storage of medicines is highly relevant. It may be initiated with guidelines using educational material. Within the communication practices in health services, the efficaciousness of educational interventions is affected by the availability of materials used as didactic resources⁷, which may be used for exchange in information among professional and users of the health system⁸.

The preparation of new and adequate material by professionals for health education is a very sensitive process. One should underscore the great influence of health professionals to validate the material due to their knowledge with regard to the needs of the target population and the frequent motives for inadequate

practices with drugs. Validation by the target population should also be taken into account since the final behavior of users is affected by their capacity and their comprehension of the material and its message⁸.

There is a dearth of information on educational material on the correct storage of medicine. In spite of the theme's importance, there are no scientific studies to obtain and validate adequate material for efficient educational interventions. Current paper deals with the preparation of printed educational material (PEM) on the correct storage of medicines, validated by health professionals and by users of the Brazilian National Health System (SUS) and verify the feasibility of its use in health promotion groups for a greater awareness on the subject..

METHODOLOGY

PREPARATION OF PRINTED EDUCATIONAL MATERIAL (PEM)

The first stage for the preparation of PEM is a bibliographical survey of educational materials related with the storage of medicine in the home. In September 2016, articles in English and Portuguese, published in the last ten years, were retrieved from databases PUBMED (of the National Library of Medicine, USA); LILACS (Latin-American and Caribbean Literature in Health Sciences) and SciELO (Scientific Electronic Library Online), whilst illustrations were retrieved from database Google (www.google.com/images). The terms household storage of medicine; medicine storage, medicine home; farmácia caseira; armazenamento de medicamento, folders; storage of medicine at home, flyers were descriptors used in the search.

The most important data which the models indicated were analyzed, taking into account the following questions: (1) What are the consequences of incorrect storage of medicine? (2) Where may medicine be correctly stored in the home? (3) Where are the places which cannot be used for the storage of medicines? (4) Are the illustrations self-explaining?

Topics, deemed basic for guideline on the theme but had been omitted, were later inserted in

the already extant material. With all these parameters, educational material was prepared and sent for final editing by the Colégio Técnico Industrial de Santa Maria of the Universidade Federal de Santa Maria (CTISM/UFSM).

VALIDATION OF PEM

PEM was validated in its first version by judges/health professionals in Santa Maria RS Brazil and by Brazilian NHS (SUS) users of the municipality to legitimize the material. Research was approved by the Committee for Ethics in Research of the Universidade Federal de Santa Maria (Protocol 1,866,298) and people who participated in the validation study signed the Free Consent Term (TCLE).

Sample size was calculated following Lopes et al.⁹, by the formula: $n = Z_{\alpha/2} \cdot P(1-P)/e^2$, where n is the sample size; $Z_{\alpha/2}$ is the coefficient of confidence; e = absolute sample error; P = proportion of occurrence of the phenomenon in the study. Confidence level was 95% (1.96), or rather, at least 70% of evaluators would classify PEM as satisfactory. Calculation rates comprised $Z_{1/2} = 1.96$; $P = 0.50$; $e = 0.15$, or rather, 43 agents for each evaluation. Further, an additional 10% was applied to avoid possible losses, with 48 as the minimum sample number. Samples comprised 52 judges/health professionals and 50 users.

Coupled to PEM and protocols for their evaluation by judges and users, the social and demographic profiles of participants were also characterized. Users' job was also shown following descriptions by the Brazilian Job Classification¹⁰ plus the categories student, retired and housewife.

Health professional (pharmacists, physicians and dentists) attending to people in the municipality of Santa Maria RS Brazil, professors and researchers at the UFSM in first care, collective health and health education, were selected as judges/health professionals.

The concept of content validity and design was employed for evaluation. In other words, a tool based on results that measure the adequacy of evaluation items with regard to contents, and judges' agreement¹¹. The tool featured questions related to the consent of the

health professional with the adequacy and pertinence of the educational material adapted by Oliveira et al.¹². Six items were assessed: (1) do contents provide relevant information? (2) Are the texts clear and understandable? (3) Do illustrations have the appropriate traits for their comprehension by adults? (4) Are the illustrations required for the understanding of contents? (5) Did the illustrations and texts motivate the reader to understand the theme? (6) Is the material applicable in day to day clinical practice of the health professional?

Users and their companions, determined by convenience, who were in the waiting hall in five Health Units (HUs) in Santa Maria RS Brazil, were selected,

Evaluation tool was based on the difficulty and convenience of the material given by Doak et al.¹³, called Suitability Assessment of Materials (SAM), consisting of a check list of attributes related to organization, writing style, image and motivation.

CAPACITY OF EMPLOYING PEM FOR HEALTH PROMOTION

Two awareness activities on the correct storage of medicines were undertaken by the *MedicAção* Group during August and September 2019 to verify the capacity of PEM usage. The *MedicAção* Group comprises health undergraduates and professors, and deal with teaching, research and extension activities on practices related to drugs in Collective Health. Activities were undertaken by small health promotion groups in health units in Santa Maria and aimed at the manufacture of boxes for medicine storage in homes, preceded by an awareness discussion on the theme.

Activity 1 was undertaken by a group called *VIVA*, composed of SUS users without any specific pathologies, whereas Activity 2 was performed by the group *ABRAÇOS* comprising SUS users with non-transmissible chronic diseases. Activities were adapted for the presentation, delivery and exploration of PEM contents by a dialogued explanatory conference followed by the manufacture of boxes to store medicine at home. Conference plus slides employed accessible and common language to help understand and enhance contributions by the target population. Questions were asked during

the conference on how and where medicines were stored by the participants. After the answers, each and every situation forwarded by the participants was discussed and explanations on the consequences of inadequate practices were given and guidelines on the correct way for medicine storage at home were provided.

After the dialogued conference, participants started the manufacture of boxes for medicine, guided by a group of auxiliary health people. The task consisted of personalizing a common shoe box for storing medicine.

DATA ANALYSIS

Validation data were analyzed by Statistical Package for the Social Sciences (SPSS®) 20.0. Concordance analysis for each item was undertaken by adjustment of proportion of the health professionals / judges who agreed on the pertinence of the educational material and of users who analyzed the material's difficulties and convenience. The Content Validity Index (CVI) followed three approaches: (1) I-CVI (Level Content Validity Index) – in the case of each item, I-CVI was computed by the number of health professionals / judges who evaluated the item as greatly and highly relevant; (2) S-CVI/AVE (Scale-Level Content Validity Index, Average Calculation Method), the proportion of items of the scale evaluated as greatly relevant and high relevant by each assessor; (3) S-CVI (Scale-Level Content Validity Index): mean of proportion of items evaluated as relevant and greatly relevant by participants. Index equal to or higher than 0.80 was desirable in content validation¹¹.

Other data of health professionals / judges and users' data were analyzed by double entry in Epiinfo® 6.0 and expressed as absolute or relative frequency. The chi-square test at 5% significance level was employed for gross analysis of associations.

Qualitative analysis of comments and suggestions was undertaken according to the concordance degree of content, design and organization of PEM¹⁴, with the identification of the required modifications for the material's reformulation and legitimation.

RESULTS AND DISCUSSION

PREPARATION OF PEM

A estratégia de pesquisa de levantamento de materiais educativos existentes sobre armazenamento correto de medicamentos pode ser visualizada na Figura 1. Após exclusão dos materiais repetidos e daqueles que não atendiam aos objetivos propostos, o processo de coleta das publicações evidenciou escassez desses materiais, visto que durante a busca nas bases de dados foram encontradas zero publicações no PubMed, Lilacs e Scielo e apenas 14 no Google imagens. Salienta-se que 64% dos materiais apresentavam somente texto educativo, restando apenas cinco acervos com ilustrações sobre o tema.

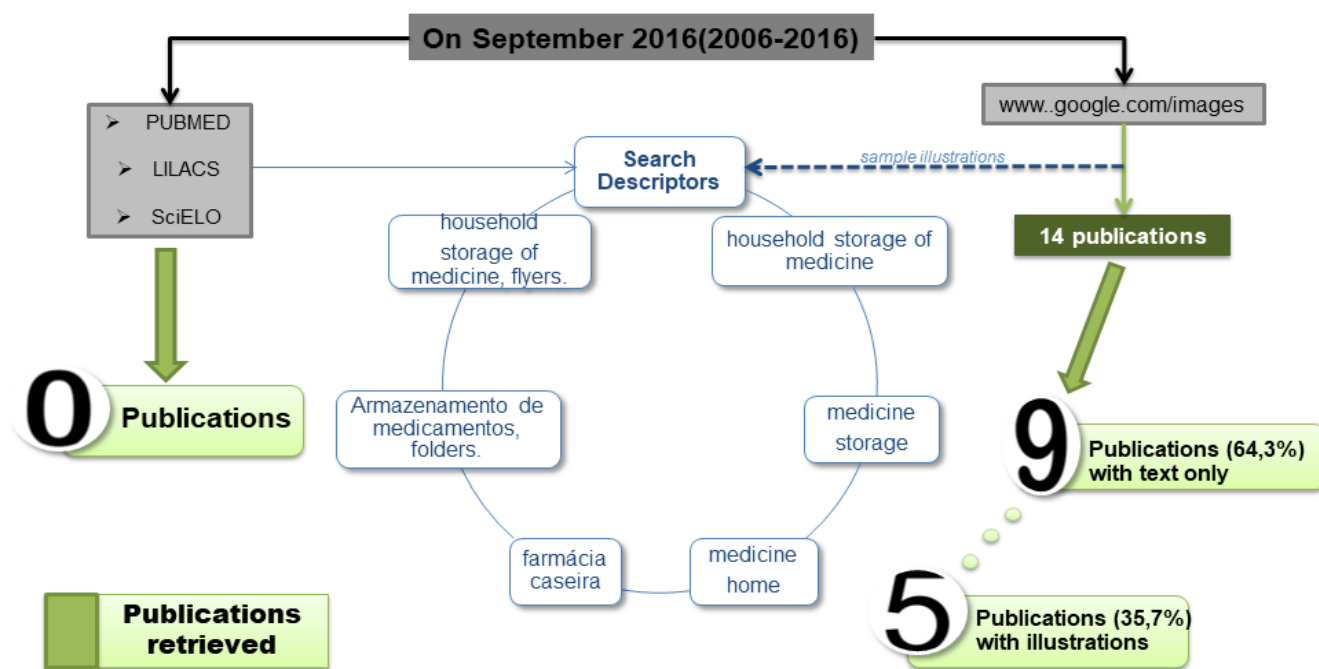


Figure 1. Survey of educational material on the correct storage of medicine
Source: Data retrieved from research

Analysis of publications revealed that some topics were repeated and were of great importance within the context of self-care, maintenance of pharmacotherapeutic material and prevention from intoxication. However, the consequences of incorrect storage or guidelines on the proper conditioning of drugs at home, considered to be relevant topics within the health education process on the theme, were not dealt with in 93% of the materials studied.

The consequences on bad conservation are related to chemical and physical stabilization of the medicine. In fact, 21.4% of materials under analysis warned on the need "to avoid contamination with other products or insects". Information on inadequate storage sites, such as humid places or with great temperature variations, occurred in 7 (50%) publications. The above conditions would cause the acceleration of several mechanisms which degrade the active principles and compromise the stability and efficaciousness of the user's pharmacotherapy⁵.

Consequently, it was deemed important to insert such information as correct storage sites in the material produced in current analysis, with special reference to conditioning material in a refrigerator

according to health professionals' guidelines.

It should also be highlighted that the place where the medicine is placed in the home may bring health risks. Although in households with children, the storing of medicines should be done with great caution, only five materials (35.7%) provided the information 'Keep out of the reach of children'. Approximately 35% of intoxication cases in Brazil, in 2016, were caused by medicine and 17% were events involving children under 14 years of age⁶.

Another topic for the construction of PEM refers to the maintenance of the drug in its original packaging, with the information leaflet inside to avoid problems on bad conservation and protect the product from external factors (light, dust, temperature, contaminating agents, place and transport) for identification and verification of expiry date. Expiry date, greatly relevant to control stored medicine, was highlighted in seven (50.0%) of the materials analyzed in the bibliographical survey.

Two bibliographical publications (14.2%) discussed the interaction between co-related themes, such as disposal of medicine in the common garbage bin. In fact, disposal of the medicine may be a consequence of its storage. A study with SUS users in Santa Maria identified

the prevalence of 26.6% of incorrect storage practices and 50.3% of inadequate disposal by the population under analysis. Incorrect storage and disposal practices have been associated with lack of information on storage and disposal, and failure to verify the medicine's expiry date⁴.

The pharmacist is the professional who provides information on medicine, although only 21.4% of the publications in the literature highlighted the warning: "In case of doubt, please consult your pharmacist". Pharmacists should be aware of their role to provide adequate dispensing and providing information on storage. When recommendations are not followed, the medicine may deteriorate and, consequently, it may cause intoxications and other interactions¹⁶. However, other health professionals who prescribe medicine, such as physicians and dentists, should be inserted in health activities. In fact they are also responsible for the necessary guidance on the correct storage of medicine. Such information was also recommended for insertion with other information in PEM produced in current study.

It should be underscored that 64% of publications had a mere educational text with only 5 having also illustrations on the theme. PEM comprised four pages with print on the front and the back, folded in the middle. Illustrations on medicine storage with correct and incorrect information on the theme was given priority so that a diversified target population could be reached and illiterate people included

PEM tried to deal with topics related to (a) consequences and risk of incorrect storage for conscience-awareness; (b) inadequate practices; (c) correct guidelines for the conditioning of medicine. The establishment of a contact with the group was also added by identifying and providing the contact link "Talk to us".

VALIDATION OF PEM BY HEALTH PROFESSIONALS

After its elaboration, PEM was validated. The population comprised 52 judges/ health professionals, of whom 76.9% were females (Table 1). Ages ranged between 25 and 65 years old, median age 46 years. Moreover, 46.2% of participants were within the 46 - 60 years-old bracket and 51.9% were pharmacists. Predominance is relevant since the pharmacist is frequently the last or the only health professional in contact with the user¹⁵.

Table 1. Profile of validation judges of PEM for the correct storage of medicine according to demographic and socio-economic variables

Variables	N	%
Gender		
Female	40	76.9
Male	12	23.1
Age		
25-45 years old	24	46.2
Over 46 years old	76	53.8
Schooling		
Graduate	10	19.2
Postgraduate	42	80.8
Profession		
Pharmacist	27	51.9
Physician	14	26.9
Dentist	11	21.2
Place of work		
UFSM	24	46.2
Municipality	28	53.8
Years of profession		
Up to 5 years	5	9.6
6 - 10	5	9.6
11 - 20	15	28.8
Over 20 years	27	51.9

PEM: Printed Educational Material; UFSM: Universidade Federal de Santa Maria.

Source: Data retrieved from research

Most judges/ health professionals in the material produced in current analysis had a specialization course (80.8%) and an experience of more than 20 years (51.9%) as health officials, indicating their great importance. Moreover, 53.8% worked in the municipality in direct contact with SUS users. According to Alexandre & Colucci¹⁶, the experience of a health professional takes into account patients' knowledge and capacity and contributes towards the manufacture of educational material and, consequently, a better understanding of the group of people to whom the message is addressed.

Agreement of health professionals with the PEM's adequacy was significant in all its parameters ($p < 0.05$). Mean proportion of items which were evaluated as relevant and greatly relevant (indexes equal to or higher

than 0.80) reached 96% (S-CVI = 0.96) and thus validated 13 (Table 2). It should be highlighted that for 79% of the judges, relevance proportion of the six items (S-CVI-AVE) was 1, or rather, all items were highly relevant. High validation index for contents, represented by the specialists' analyses and commentaries/suggestions, boils down to the clarity and representativeness of each item, with concrete improvements in the prepared material¹⁷.

Table 2. Evaluation of judges and SUS users in the validation of PEM for the correct storage of medicine

Validation by judges		
	Evaluation items	I-CVI
	Contents present relevant information	0.98
	Texts are clear and easy to understand	1.00
	Illustrations present designs for adults	0.98
	Illustrations are useful for the understanding of the contents	0.90
	Illustrations and text motivate the reader to understand the theme	0.90
	Applicability of the material in day to day clinical practice of the health professional	0.98
S-CVI mean judges = 0.96		
S-CVI/AVE judges: Proportion of relevance of the six items:		
	> 0.8 in 96% of judges (= 1 in 79% of judges)	
	< 0.8 in 4% of judges	
Validation by users		
	Evaluation item	I-CVI
<i>Organization</i>		
	Cover attracts your attention	0.92
	Material shows the theme referred to	0.98
	Topics have a sequence	0.98
	Size of contents of topics is adequate	0.98
<i>Writing style</i>		
	Easiness in understanding the sentences	0.98
	Content are clear	0.98
	Text is interesting	0.92
<i>Motivation</i>		
	The material is easy for any person who reads it	1
	Motivation to read to the end	0.88
	Material suggest action or thinking on the theme	0.94
<i>Illustrations</i>		
	Illustrations are clear and to the point	0.94
	Illustrations help in a greater understanding of the text	0.96
S-CVI mean users = 0.95		
S-CVI/AVE users: Proportion of relevance of the twelve items:		
	> 0.8 in 90% of users (= 1 in 75% of users)	
	< 0.8 in 10% of users	

PEM: Printed Educational Material; I-CVI: Level Content Validity Index; S-CVI: Scale-Level Content Validity Index; S-CVI/AVE: Scale-Level Content Validity Index/Average

Source: Data retrieved from research

Material on health education should be written in a clear style and few words, transmitting precise information

14. The text was attributed I-CVI = 1, or rather, all the judges/ health professionals evaluated the clear and intelligible wording of the text as highly relevant. Result is significant since texts should be easily understood by the target population.

Validation index of 0.98 was attributed to three parameters: contents, applicability of the material for day to day consumption and adult-appropriated illustrations. The validation of items fits the requirement that studies implying educational material verify whether they are adequate within the circumstances they are employed. Even if the content is valid and comprehensible, it is mandatory that material is feasible for usage⁷.

Ninety percent of health professionals insist that illustrations in PEM are necessary and motivate the reader to understand the theme better. Similar results are provided by a study on the elaboration of an educational handout for healthy feeding during pregnancy, where the judges evaluated contents and illustration as pertinent for the motivation and instruction of the target population (I-CVI=0.90)¹². Other authors state that illustrated educational leaflets are relevant resources to be employed in several fields and health specialties^{7,12,18}.

According to the validation indexes of contents, PEM was actually validated by the judges/ health professionals¹³. Further, statistical analysis of PEM validation (I-CVI higher than 0.8) coupled to judges' profile revealed that result was not associated ($p > 0.05$) with gender, age group, job, work site, years exercising the profession or specialization, and thus corroborated excellence and technical validity of the material⁸.

Since carelessness with the home pharmacy may influence the efficaciousness and the safety of the medicines and since most people are not aware of the risks inherent to inadequate use and storage at home of medicine, it is important that the educational material developed should also be comprehensible and validated by the target population.

In fact, only 48 of the 50 users invited to participate in current research participated in the study (Table 3), of whom 58.3% were females and 41.7% males. High percentage of females in clinic waiting rooms is perhaps due to the fact that males are more reluctant to take care of their health and, consequently, seek less health services than females. Age ranged between 18 and 45 years, with a prevalence (58.3%) of young adults. Different schooling levels were detected ranging between the 4th year of primary school (12.5%) and postgraduate students (2.1%).

When items evaluated by users, such as organization, text, motivation and layout of PEM are taken into account (Table 2), average validation index (mean I-CVI) reached 0.95. Mean of proportion of items evaluated as relevant and very relevant (indexes equal to or higher than 0.80) (S-CVI = 0.95) validated the material by the target population.

Validation indexes on content organization were higher than 0.92. In the case of layout, 94% of users said that illustrations were simple and 96% stated that they were a help in the comprehension of the text (I-CVI 0.94 – 0.96, respectively). Corroborating results of a previous analysis, it has been verified that illustrations showed scenarios highly close to the target population and proved to be a tool to facilitate the understanding of information and its use in day to day experience¹⁸.

VALIDATION OF PEM BY USERS

Table 3. Profile of SUS users in the validation of PEM for correct medicine storage according to demographic and socio-economic variables

Variable	N	%
Gender		
Female	28	58.3
Male	20	41.7
Age		
18-30 years old	28	58.3
Over 31 years old	20	41.7
Schooling		
Up to the 5th year of Primary School	6	12.5
Up to the 9th year of Primary School	6	12.5
Incomplete high school	14	29.2
Complete high school	8	16.7
University degree	11	22.9
Incomplete University degree	2	4.2
Postgraduate	1	2.1
Job		
Workers in repair and maintenance services	3	6.4
Members of the armed forces, police and firemen	1	2.1
Works in services, salespersons in shops and markets	11	23.4
Science and arts professionals	1	2.1
Higher members of public administration, directors of public organizations and firms, administrators	3	6.4
Workers in good production and industries	1	2.1
Workers in administrative services	2	4.3
Agriculture, forest and fishing workers	2	4.3
Student	13	27.6
Housewife	9	19.2
Retired person	1	2.1

PEM: Printed Educational Material.

Source: Data retrieved from research.

The type of language employed made easy the transmission of the message for users, the target population of the handout¹⁴. In fact, this aspect was devised for current PEM: phrases lacked technical terms and a popular style was employed. This is highly important for the conscience-awareness of the target population and it is corroborated by the validation of the wording through which 'understanding the phrases' and

'contents' had high validation indexes by users (0.98). Another study on validation and the preparation of an education leaflet for the prevention of HIV/AIDS in elderly people revealed the need of replacing difficult terms and the use of simple language for the target-population¹⁹.

Contents validation index for motivation was equal to 1 (Table 2), or rather, all users evaluated that any person who reads the leaflet would understand its

contents. Only 12% were not motivated to read the whole contents and 94% reported that the material stimulated acting and thinking on the theme. According to Souza et al.20 the contents and aims of education material should be clear for the reader, otherwise the patient shuns the material. Motivation stimulates learning and knowledge, facilitating the teaching-learning process. In fact, motivation is directly related to the interaction between text and illustrations^{8,19}. In fact, these parameters had a positive evaluation in current analysis.

QUALITATIVE VALIDAÇÃO OF PEM

Besides the evaluation of contents analysis, judges/health professionals and users also evaluated PEM qualitatively and 24 commentaries and suggestions were provided. Six changes were undertaken due to their relevance and their non-impairment in the contents and legitimation of the evaluated material. Other commentaries and suggestions such as praises or suggestions alien to the theme were discarded.

Modifications comprised replacement of the term 'preserve' by 'conserve' on the cover; the substitution of full stop in the phrases of p. 2 instead of semicolon; increase size of freezer of the refrigerator; replacement of illustration of sink by illustration of a more simple closet with a simple sink and mirror with built-in cabinet. Space for comments and suggestions were tools for the inclusion of contents for certain important items which validation did not insert.

Figure 2 shows PEM validated by judges/health professionals and users after changes.



a)



b)

Figure 2. Validated educational material on the correct storage of medicine: a) front cover and back cover; b) contents

Note: Figure with text in the original language.

Source: Data retrieved from research

THE POTENTIAL USE OF PEM IN HEALTH PROMOTION ACTIVITIES

Activity 1 by group VIVA was undertaken by 7 participants, between 30 and 50 years old, whilst activity 2 by group ABRAÇO was undertaken by 4 users, between 30 and 65 years old, totaling 11 agents as the target population.

The activities of the health promotion groups triggered an interaction with the target population with regard to medicine storage especially within the group ABRAÇOS because of their condition as people with chronic diseases. PEM was the starting point for dialogues and solving doubts.

According to Haddad & Jorge²¹, the understanding of users' health needs implied in a dialogue and their acknowledgement as active agents in health processes, respecting human, culture and social diversity. The elaboration of health care activities that attend to users' needs is one of the main challenges for health professionals²².

PEM demonstrated the consequences of inadequate conditioning and enhanced correct guidelines. After people's participation on medicine storage mentioning such places as bedrooms and kitchen, the educational leaflet was basic for the group to underline that humid places, interior of cars or places with a wide temperature range accelerated the degradation of medicines and jeopardized stability and their inefficiency. Cleaning and prevention against domestic pests were also mentioned as important in the conditioning of medicines.

Information provided by PEM that medicines should not be removed from their original packaging due to the leaflet giving all the information for users, was particularly relevant for the participants. Further, due to the report on the habit of storing medicine in the refrigerator, it was made clear that only some medicines should be placed in refrigerators and under the orientation of a health professional.

The task of customizing common shoe boxes for the storage of medicine was timidly undertaken by the participants. However, after some time, they manufactured their boxes, interacted and solved their doubts on the theme.

After preparing the boxes, participants carried their medicine boxes and the PEM. Participants were motivated to take the PEM to their family and friends, and disseminate the information imparted as a multiplier of knowledge. At the end of the activities, the participants felt satisfied and revealed that guidelines were interesting. Knowledge was thus disseminated by a relevant tool, making an enriching and gratifying experience.

FINAL CONSIDERATIONS

The availability of PEM informing on the consequences and risk in the incorrect storage of medicines, inadequate practices and correct recommendations for the conditioning of medicines elaborated from scientific research filled a gap in the supply of materials and contributed towards the widening of educational activities in health.

Further, it is highly relevant to validate PEM by health professionals and by users of the SUS who helped in its adequacy and importance (S-CVI = 0.96) and in the validity of contents, design, clarity and convenience. The material's qualitative analysis was basic for the meaning of terms and illustrations according to the individual comprehension of professional and users.

Consequently, PEM was validated with regard to contents, comprehension, language and design by help professionals (pharmacists, physicians and dentists) and by users.

PEM proved to be an asset in conscience-awareness on the home storage of medicines in health promotion groups. The easy comprehension of the aim for each PEM guideline evidenced its transforming capacity and disseminator of information. The amplification of effectiveness of educational activities of awareness that use PEM as information tool should be underscored.

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