Development of a Manual for the Prevention and Treatment of Skin Tears

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ABSTRACT

A skin tear is a partial-thickness wound whose main characteristic is the presence of a skin flap. There are many contributing factors to skin tears, but few practical guidelines are available in the literature for their prevention and management. **Objective.** The aim of this study is to develop a manual for the prevention and treatment of skin tear injuries. **Methods.** A literature review on skin tears was conducted. The manual was organized into 7 chapters of topics of interest to health care professionals. Its content validity was assessed in 2 rounds of consultation by 7 health professionals with a master's or doctoral degree who were experienced in skin lesions. **Results.** The manual was successfully validated for content by the expert panel. The content validity index (CVI) was 0.96 for the topic *Objective*, 0.96 for *Structure and Presentation*, and 0.93 for *Relevance*. The final version of the manual showed an excellent overall CVI of 0.95. **Conclusions.** A content-validated manual for the prevention and treatment of skin tears was created to guide nursing professionals in the management of patients with skin tears, which contributes to the identification of risk factors and development of preventive measures.

KEY WORDS

manual, wounds, skin tears, injuries, disease prevention, wound healing, guidelines

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A skin tear is a partial-thickness wound involving the separation of the dermis from the underlying connective tissue to create a skin flap. The flap may be classified either as an epidermal flap resulting from the separation of the dermis from the epidermis (partial-thickness skin wound) or as a dermal-epidermal flap when both the dermis and epidermis are separated from the underlying structures (full-thickness wound).[1] A new classification was proposed by the International Skin Tear Advisory Panel (ISTAP) based on the presence or absence of the skin flap.[2] It classifies skin tears into 3 different types: Type 1, injuries without skin loss; Type 2, injuries with partial loss of the flap; and Type 3, injuries with total loss of the flap.[2]

In contrast to chronic wounds, skin tears are acute wounds that heal rapidly by primary intention.[2] Intrinsic and extrinsic factors are involved in the development of skin tears,[3] including age, nutritional status, underlying disease, smoking habits, use of medications, immunosuppressive agents, anti-inflammatory drugs and anticoagulants, and use and removal of adhesives and wound dressings from the skin.[4,5]

The Skin Tear Audit Research (STAR) Skin Tear Classification System was translated and cross-culturally adapted by Strazzieri-Pulido[6] for use in Brazil in the assessment and management of skin tears. Strategies for the prevention of skin tears are still based on consensus, related studies, and expert opinions. The most important preventive measures are the identification of risk factors, provision of skin care interventions, and provision of adequate nutrition, hydration, safe environment, and training for health care professionals.[7,8]

One of the strategies in health education is the use of educational materials such as manuals contemplating practical techniques, basic principles, and frequently asked questions.[9] A manual has the ability to standardize procedures and may provide a guide for actions as well as assist health care professionals in selecting interventions.[10] The illustrations and presentation of information should be attractive, concise, and kept as clear and simple as possible, with relevant guidelines related to the topic.[10]

Considering that guidelines for the management of patients with skin tears are found in books, articles, and proceedings of consensus meetings, the dissemination of information on the prevention and treatment of skin tears in a more practical way and directed to the health care professional is necessary.

Thus, the aims of this study were to develop a manual for the prevention and treatment of skin tears for nurses and to assess its content validity.

MATERIALS AND METHODS

This descriptive, analytical study was approved by the Research Ethics Committee of the Federal University of São Paulo (UNIFESP; São Paulo, Brazil; approval #76722001116/2016) and performed in accordance with the ethical standards of

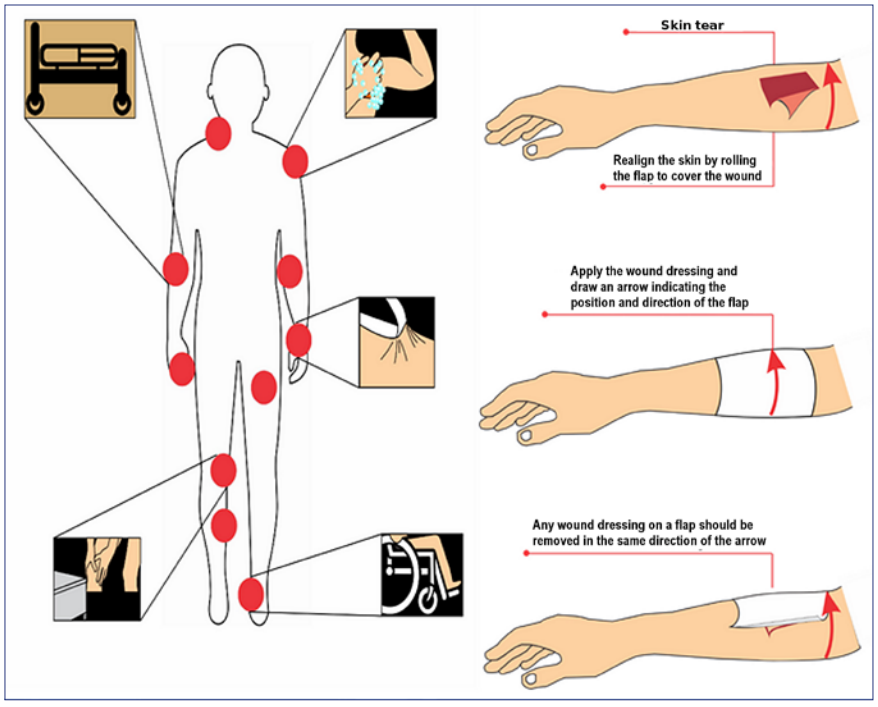

Figure 1. Example of illustrations found in the manual.

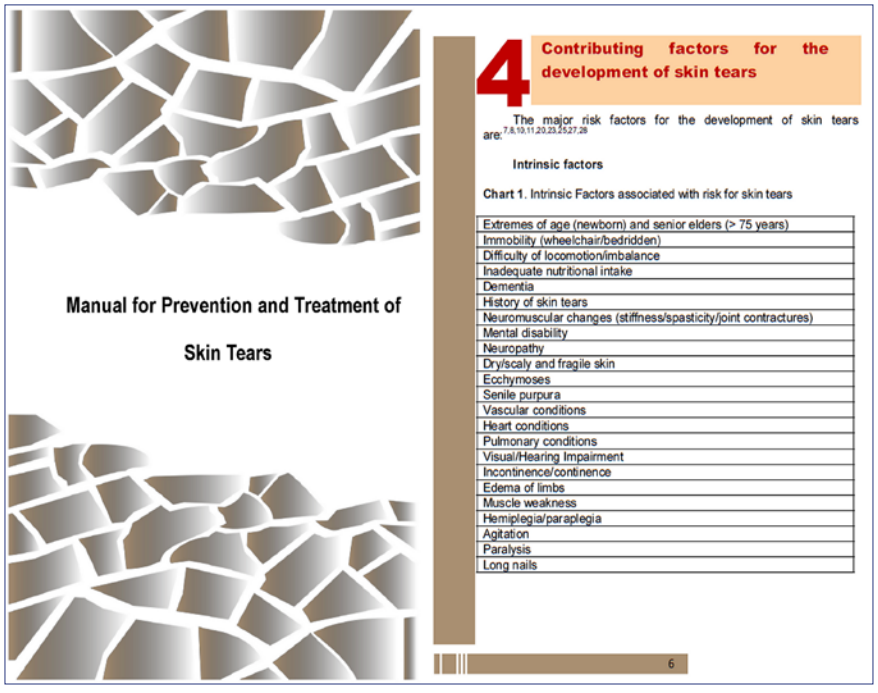

Figure 2. Layout of the manual.

the Declaration of Helsinki and its subsequent amendments. Written informed consent was obtained from all participants prior to their inclusion in the study and anonymity was assured.

The study was divided into 3 stages: (1) the development of the manual, including a literature review, selection of content and information handling, writing, and creation of illustrations and layout features; (2) the assessment of content validity of the manual through consultation with experts, assessment of content adequacy, and proofreading; and (3) the distribution of the manual.

Initially, a literature review was conducted on topics related to the risk factors, prevention, and treatment of skin tears. The Medical Literature Analysis and Retrieval System Online from the United States National Library of Medicine (MEDLINE), Scientific Electronic Library Online (SciELO), and Latin American and Caribbean Health Science Literature (LILACS/Bireme) databases were searched for articles, theses, dissertations, and proceedings of consensus meetings. The topics to be included in the manual were selected, covering wound classification, prevention, and treatment interventions.

The first version of the manual was created in a word processor (Word 2013; Microsoft Corporation, Redwood, WA). The text was written in a clear, simple, concise, and attractive style.

Preliminary sketches were created by the researchers and sent to a graphic designer, who converted them into vector graphics using CorelDRAW Graphics Suite X6 (Corel Corporation, Ottawa, Ontario, Canada).

The layout of the manual followed the Brazilian Standard NBR-6029.[11] It was divided into 3 parts: (1) cover and back cover; (2) pretextual and textual elements; and (3) post-textual elements. The textual elements comprised the content presentation, selected topics, layout features, drawings, and images. Pages were numbered using Arabic numerals inserted at the bottom and centered, starting from the first textual page. Chapter titles were numbered in Arabic numerals located at the top left corner of the page. The post-textual elements included final considerations and a list of references.

Next, content validity was evaluated through consultation with experts. Eleven experts were selected by nonprobability convenience sampling[12] based on their academic degree and field of specialization, scientific production, clinical experience, and years of experience in the field. There

were no exclusion criteria besides not meeting the inclusion criteria. An odd number of experts was selected to avoid a tie if voting was necessary.[13] The experts received an invitation letter via e-mail explaining the objective of the study together with a questionnaire to be used in the evaluation of the manual. The content of the manual was evaluated and judged by a panel of experts through the questionnaire in the search for a consensus opinion. Usually, 2 to 3 rounds or cycles of consultation are necessary to reach a consensus, but more rounds may be needed. The experts were requested to return the completed questionnaire for each round of consultation within 15 days.

The questionnaire items had 5 possible responses (1 = inadequate; 2 = partially adequate; 3 = adequate; 4 = very adequate; and N/A = not applicable). The content validity index (CVI) was used to measure the proportion or percentage of judges who were in agreement on certain aspects of the manual. The CVI was calculated by considering the number of responses of *adequate* or *very adequate* for each item divided by the total number of responses (**CVI Formula**). The CVI for each item should be ≥ 0.78 for content validation of an instrument when the panel is composed of 6 or more experts.[14]

CVI FORMULA

$$\text{CVI} = \frac{\text{Number of responses } \textit{adequate} \text{ or } \textit{very adequate}}{\text{Total number of responses}}$$

The overall CVI is given by an additional formula (**Overall CVI Formula**). The minimum overall agreement of 90% was required among experts for content validation of the manual.

OVERALL CVI FORMULA

$$\text{Overall CVI} = \frac{\text{Sum of all CVI values}}{\text{Total number of items}}$$

The questionnaire assessed 3 main topics: *Objective* (7 items), evaluating the importance of the subject; *Structure and Presentation* (11 items), analyzing the overall presentation, general organization, structure, strategy of presentation, coherence, and formatting; and *Relevance* (4 items), regarding the level of importance of the manual as an educational material.

Only the items rated by the experts as *adequate* (3) and *very adequate* (4) were entered into the CVI calculation. Items rated as *inadequate* (1), *partially adequate* (2), and *not applicable* (N/A) were carefully revised as suggested by the experts and returned to them for a second round of consultation; thus continued until at least 78% consensus was reached on each item.

The final version of the manual was sent to a Brazilian-Portuguese teacher for proofreading.

In the third stage, the manual was converted to a PDF to be published online and in print.

RESULTS

Manual development

In the literature review, few publications on skin tears were identified in the Brazilian-Portuguese language; most of the scientific production was published in the English language. A total of 47 studies were found on the topic, including proceedings of consensus meetings, theses, dissertations, and articles, 5 of which were from Brazilian authors. The manual content included an introduction, changes in the skin and risk of skin tears, identification of skin tears, essential preventive measures for skin tears, treatment interventions, and final considerations.

The manual had 24 figures divided into tables, flowcharts, graphics, photographs, and drawings. **Figure 1** is an example of the illustrations.

Soft colors were used for the layout, and the style of all illustrations was standardized with the objective of producing an artistic, aesthetic, and creative look (**Figure 2**).

Table 1. Characteristics of the experts who participated in the validation of the manual

VARIABLES	N=7
Field of knowledge	
Nursing	7
Occupation	
Nursing faculty	3
Graduate student	1
Practicing nurse	3
Type of institution	
Public	6
Private	1
Academic degree	
Doctoral degree	2
Master's degree	4
Master's degree student	1

Content validation of the manual

Invitations to participate on the expert panel were sent to 11 nursing professionals with experience in the field who were working as a nursing faculty or a practicing nurse; most worked in public institutions and had a master's or doctoral degree. Of the 11 nurses, 7 accepted the invitation to participate in the study. The characteristics of the selected health care professionals are shown in **Table 1**.

The responses to the questionnaire items given by the experts in both rounds of consultation are shown in **Tables 2–4**.

All CVI values for the items on the topic *Objective* ranged from 0.85 to 1.0 and therefore were greater than the minimum CVI of 0.78 required for content validation. All items on this topic were validated in the first round of consultation (**Table 2**). Although the items 2 and 5 in **Table 2** were rated as *partially adequate* by expert #1, the CVI for both items was 0.85, which is greater than the 0.78 level of significance, and therefore the second round of consultation was not carried out. Expert #1 suggested the text related to items 2 and 5 should be rewritten for easy

Table 2. Expert assessment of the topic *Objective* of the manual

	EXP #1		EXP #2		EXP #3		EXP #4		EXP #5		EXP #6		EXP #7		CVI[a]
ITEMS	**1st**	**2nd**	**1st**	**2nd**	**1st**	**2nd**	**1st**	**2nd**	**1st**	**2nd**	**1st**	**2nd**	**1st**	**2nd**	
1. It is consistent with the needs of nursing professionals	4		4		4		4		3		4		3		1.0
2. It is consistent with the criteria for treatment of skin tears	2		4		3		4		3		4		3		0.85
3. It is consistent with the criteria for prevention of skin tears	3		4		3		3		3		4		3		1.0
4. It is consistent with the criteria for identifying contributing factors of skin tears	3		4		3		3		3		4		4		1.0
5. It is consistent with the criteria for identifying and classifying skin tears	2		4		4		4		4		4		3		0.85
6. Can be distributed among health care researchers	3		4		4		3		4		4		4		1.0
7. Meets the needs of institutions providing care for people at risk of skin tears	3		4		4		3		4		4		4		1.0
Total	**20**		**28**		**25**		**24**		**24**		**28**		**24**		**6.7**

EXP: expert; CVI: content validity index; 1st: first round of consultation; 2nd: second round of consultation

[a] CVI ≥ 0.78 is considered statistically significant.

understanding by nonexperts. Thus, the text was revised to increase readability and understanding.

The topic *Structure and Presentation* required more revision, with 4 items requiring a second round of consultation for validation (**Table 3**). In the first round, experts #4 and #7 rated item 1 as *partially adequate* and suggested the text should be more concise and colors should be included in tables, highlighting the guidelines on the prevention of skin tears. Three experts (#1, #3, and #4) rated item 2 as *partially adequate* and requested changes in the terminology, flowchart structure, and figures; standardization of the summary; and grammar correction. Item 6 also was rated as *partially adequate* by 3 experts (#1, #2, and #3), who suggested spelling and grammar corrections. Experts #1 and #4 rated item 8 as *partially adequate* and recommended changes in the position of the authors' names on the back cover. Although in the second round 2 experts (#3 and #7) did not return their questionnaires, all CVI values were greater than the 0.78 level of significance. All suggestions provided by the experts in the second round of consultation were addressed.

In the topic *Relevance*, item 1 was rated as *N/A* by expert #2, but no suggestion for modification of the text was provided. Because item 1 had a CVI of 0.85 in the first round of consultation, it was considered validated for content (**Table 4**). Item 4 was rated as *partially adequate* by expert #2, who suggested improvement in the description of the method for wound care management. The issue was addressed and the item was validated for content in the second round of consultation (**Table 4**).

The overall CVI value was 0.95, thus greater than the minimum overall CVI of 0.90 required for content validation of the manual.

There was no need to delete or replace any illustration in the manual; all figures were approved by the experts.

DISCUSSION

An educational manual on health sciences should be based on scientific evidence and include proposals for interventions aimed at recovering, developing, or

Table 3. Expert assessment of the topic *Structure and Presentation* of the manual

	EXP #1		EXP #2		EXP #3		EXP #4		EXP #5		EXP #6		EXP #7		CVI[a]	
ITEMS	**1st**	**2nd**	**1st**	**2nd**	**1st**	**2nd**	**1st**	**2nd**	**1st**	**2nd**	**1st**	**2nd**	**1st**	**2nd**	**1st**	**2nd**
1. The manual is appropriate for instruction in the planning the nursing care	3		4		3		2	4	3		4		2		0.71[b]	0.85
2. The information is presented in a clear and objective manner	2	4	4		2		2	4	3		3		4		0.57[b]	0.85
3. The information presented is scientifically correct	2	4	4		4		4		3		3		4		0.85	1.0
4. The material is appropriate to the socio-cultural level of the proposed target audience	3		4		4		4		3		4		3		1.0	1.0
5. Logical sequence of the proposed content	3		4		4		3		3		4		3		1.0	1.0
6. The information is well structured using correct grammar and spelling	2	4	2	4	2		3		3		4		3		0.57[b]	0.85
7. The writing style corresponds to the level of knowledge of the target audience	3		4		3		3		3		4		3		1.0	1.0
8. Cover, back cover, acknowledgments, and/or presentation information is consistent	2	3	4		4		2	4	3		4		3		0.71[b]	1.0
9. The font sizes of the title and subtitles are adequate	3		4		4		3		3		3		3		1.0	1.0
10. The illustrations are expressive and sufficient	3		4		4		2	4	3		3		3		0.85	1.0
11. The number of pages is adequate	3		4		4		3		3		3		3		1.0	1.0
Total	**29**	**15**	**42**	**4**	**38**		**31**	**16**	**33**		**39**		**34**		**9.26**	**10.6**

EXP: expert; CVI: content validity index; 1st: first round of consultation; 2nd: second round of consultation

[a] CVI ≥ 0.78 is considered statistically significant.

[b] CVI values ≤ 0.78

enhancing physical and mental health, thus promoting health and social reintegration.[9,15] The *Manual for Prevention and Treatment of Skin Tears* was created as an educational instrument to help nursing professionals develop skills in the management of patients with skin tears. Manuals are widely used in health care, offering information and education to health professionals.

The manual describes a holistic approach for prevention strategies, emphasizing the identification and control of intrinsic and extrinsic risk factors for skin tears.[3-5,16] It also presents the opinions of an expert consensus panel on the use of topical therapies and dressing selection in the treatment of these injuries.[17] The findings of international studies were adapted to include wound dressings available in the Brazilian market.

The manual was professionally designed by a graphic designer, who developed the illustrations and materials

Table 4. Expert assessment of the topic *Relevance* of the manual

	EXP #1		EXP #2		EXP #3		EXP #4		EXP #5		EXP #6		EXP #7		CVI[a]	
ITEMS	**1st**	**2nd**	**1st**	**2nd**	**1st**	**2nd**	**1st**	**2nd**	**1st**	**2nd**	**1st**	**2nd**	**1st**	**2nd**	**1st**	**2nd**
1. The content portray key elements that need to be strengthened	4		N/A		4		3		3		4		3		0.85	0.85
2. The manual motivates the user to learn more about the prevention and management of skin tears	4		3		4		3		3		4		3		1.0	1.0
3. The manual addresses the topics necessary for the training of the nursing professional who provides assistance to patients at risk or with skin tears	4		3		4		4		3		4		3		1.0	1.0
4. The manual is suitable for use by nursing professionals in their educational activities	3		2	3	3		3		3		4		3		0.71[b]	0.85
Total	**15**		**8**	**3**	**15**		**13**		**12**		**16**		**12**		**3.56**	**3.7**

EXP: expert; CVI: content validity index; 1st: first round of consultation; 2nd: second round of consultation; N/A: not available

[a] CVI ≥ 0.78 is considered statistically significant.

[b] CVI values ≤ 0.78

in a language accessible to the target audience.[18,19] Illustrations (eg, drawings, images, photographs, and symbols) contribute to a better understanding and readability of the text, and were designed to attract the reader's attention and reinforce the information.[20] Illustrations on the use of wound dressings were followed by written guidelines. The text describes a step-by-step guide for the management of skin tears, wound dressing application, and frequency of dressing changes, which are important actions in successful treatment.[21,22]

The manual was successfully validated for content by the expert panel after 2 rounds of consultation. Similar studies describe use of content validity assessment of instruments for use in health care through a panel of experts.[23-26]

The topics included in the manual are not novel in the Brazilian literature, but this instrument seeks to provide the information necessary for developing interventions for the prevention and treatment of skin tears in a simple, fast, practical, and easy-to-understand format. This study was developed in the Professional Master's Degree Program in Science, Technology, and Management Applied to Tissue Regeneration, allowing professionals to connect clinical practice to scientific knowledge and resulting in a manual that may be used as an alternative source of information in nursing education and the management of skin tears.

The *Manual for Prevention and Treatment of Skin Tears* may be used in all health institutions, especially those treating pediatric, elderly, and intensive and palliative care patients who show skin fragility.

LIMITATIONS

The ISTAP Skin Tear Tool Kit[2] was not used as a classification system of skin tears in this manual because it has not been translated, culturally adapted, and validated for use in Brazil, and this could be seen as a limitation of the study. However, the cross-culturally adapted Brazilian-Portuguese version of the STAR classification system[6] used in the manual has been used by nurses in several Brazilian health institutions. The small number of experts participating in the panel also may be viewed as a limitation of the study. Further studies with a larger number of experts from different parts of Brazil, representing different regional cultures, are necessary to extend these results.

CONCLUSIONS

A manual for the prevention and treatment of skin tears was developed and validated for content by experienced nurses. It is an instrument created to guide nursing professionals in the management of patients with skin tears,

contributing to the identification of risk factors and the development of preventive measures.

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