Review Article

Modified Delphi Technique: Validation of Risk Assessment Tool for the Prediction of Pressure Ulcer

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Abstract

A study was undertaken to develop the Risk assessment tool for prediction of pressure ulcer. Content validity of the tool was done through modified Delphi technique. The Delphi is an interactive process designed to combine expert's opinion into group consensus. Panel of experts was selected; three rounds of Delphi were completed for content validation. The I-CVI was ranged from 0.86 to 1. The content validity index of risk assessment tool (S-CVI) came out to be 0.92.

Keywords: Modified Delphi technique; Risk assessment tool; Pressure ulcer; Validity

Introduction

Bed sores, decubitus, pressure ulcers- no matter what we call them, these lesions present one of the most serious problems in the health care today. The best name for this type of wound is pressure ulcer, which describes both the cause and the condition. Pressure ulcers have been a problem since Hippocrates practiced medicine – they have been found an Egyptian mummy and they persist despite remarkable technology advances. Pressure ulcer is an area of cellular necrosis that develops when soft tissue is pressed between a prominence and a firm surface. Because of decreased blood flow, the supply of nutrients and oxygen to the skin and underlying tissues is impaired. This causes cells to die and decompose to form an ulcer. [1]

Risk assessment is recommended as the first step in the prevention of pressure sore development in nursing care. Assessment of patient should be performed on admission, and reassessed whenever patient's condition changes significantly. A risk assessment scale will help the nurses to make a systematic assessment of the patient's condition and risk of sore development. Investigators' experience in hospitals, where most of the patients are unconscious and bedridden and they are most vulnerable to get pressure ulcers. It was observed that when a pressure ulcer develops hospital costs and duration of hospitalization increases multifold. There was absence of standard tool to identify risk factor for developing pressure ulcer. A risk assessment tool would make it possible to identify those patients who really need immediate preventive measures and who will develop pressure ulcers if prevention is postponed. The draft of the risk assessment tool for the prediction of pressure ulcer was developed for content validity.

The blue print of the tool was developed in three steps

Review of literature

Review of literature is an important component in the development of the tool. The review of literature for the present study was done for various risk factors that are causing pressure ulcer in patients. Journals, books, periodicals, and pressure ulcer risk assessment tools like Braden's scale, Norton's scale and Water low tool were reviewed for the current topic.

Generation of item pools

An exhaustive list of the risk factors causing the pressure ulcer in patients was prepared for related literature review, expert's guidance as well as from the investigator's personal experience of assessing the patients. Risk factors of pressure ulcer were selected from the content and the items were pooled together. Selected items which seemed to represent the risk factors of pressure ulcer were organized to generate the first draft of risk assessment tool for the prediction of pressure ulcer.

Preparation of preliminary draft of the tool

The blueprint of the risk assessment tool for the prediction of pressure ulcer in patients has been prepared. Suggestions from the advisor and person experience of the investigator played an important role in the preparation of the tool.

First draft of the risk assessment tool for the prediction of pressure ulcer was prepared. In this draft items included were age, level of consciousness, skin type, body temperature, activity, mobility, general physical condition, physique, food intake pattern, hemoglobin, moisture, sensory perception, friction and shear and basic nursing care.

In risk assessment tool all the items were rated between 1 and 4 except age, and friction & shear rated between 1 and 3 and basic nursing care rated between 1 and 2. The minimum rating score was 15 and maximum was 52.

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Modified Delphi technique was used to validate the tool. The Delphi is an interactive process designed to combine expert's opinion into group consensus. According to this technique the response of each panelist remains anonymous that there is equal chance of each panelist to present the ideas unbiased by the identity of other panelist. There are subsequent rounds until a definitive level of consensus is recorded.

Panel of experts (9 members) was selected; the first draft of tool was circulated among them. They were requested to go through the items and give their suggestions regarding the tool; in terms that items are relevant, modified or omitted in order to measure the content validity of the tool. As per the expert's opinion, modification in the tool was made.

Three rounds of Delphi technique were completed for the content validation of the tool

Modification after First Delphi Round

Modification was done in the first draft of the tool on the basis of majority of the expert's opinion. Following suggestion was incorporated in the tool:

In age, category has been increased from three to four i.e., less than 40 years, 41 to 60 years, 61 to 80 years and more than 80. In friction and shear, category has been increase from three to four and named as not evident, occasionally evident often evident and regularly evident. In basic nursing care, the category has been increase from two to four i.e., regularly provided, often provided, occasionally provided and not provided. After this modification risk assessment tool for the prediction of pressure ulcer was prepared. The second draft tool as circulated among the same panel of expert for the further content validation.

Modification after second Delphi round

The risk factor level of consciousness was deleted. Key was prepared for some risk factors to maintain the objectivity in scoring.

After this modification risk assessment tool for the prediction of pressure ulcer was prepared. The third draft tool as circulated among the same panel of expert for the further content validation.

Modification after third Delphi round

The following modifications were incorporated: The key was further modified for scoring food intake pattern (tube feeding, total parental nutrition, nil per oral and IV fluid has been included).

Incensory perception and friction and shear key were modified. After this modification the final draft of the risk assessment tool for the prediction of pressure ulcer was prepared. The final tool consists thirteen items i.e., age, general physical condition, skin type, physique, activity, mobility, food intake pattern, hemoglobin, moisture, body temperature, sensory perception, and friction and shear, and basic nursing care. These items were further categories from one to four each. The minimum score of the tool is 13 and maximum score is 52.

Content validity

It is the degree to which the items in an instrument adequately represent the universe of content for the concept being measured. Content validity Performa (developed by Davis) was circulated to the panel of experts (earlier described) which was having 13 items and experts were asked to evaluate the items: highly relevant, quite relevant, somewhat relevant, not relevant. The content validity of items of risk assessment tool was checked by I-CVI through the performa filled by the experts (by dichotomizing the ordinal scale into relevant and not relevant, highly relevant and quite relevant given score 1 and somewhat relevant and not relevant given score 0). The I-CVI was ranged from 0.86 to 1. The content validity index of risk assessment tool (S-CVI) came out to be 0.92. Values of CVI higher than 0.78 are considered having good content validity signifying that the tool was having a good content validity.

Discussion and Conclusion

The investigator developed a risk assessment tool for the prediction of pressure ulcer in patients, which consist of thirteen items i.e., age, general physical condition, skin type, physique, activity, mobility, food intake pattern, hemoglobin, moisture, body temperature, sensory perception, and friction and shear, and basic nursing care. Lindgren et al. [2] also developed a risk assessment pressure sore (RAPS) scale, includes 12 variables i.e., general physical condition, activity, mobility, food intake, fluid intake, moisture, sensory perception, friction and shear, skin type, bodily constitution, body temperature and serum albumin. Similarly Norton et al. [3] presented a risk assessment scale (Norton Scale) for prediction of pressure sore development among elderly patients and included five variables i.e., general physical condition, mental status, activity, mobility and incontinence. The Braden Scale developed by Braden and Bergstrom [4] the scale is composed of six subscales that reflect sensory perception, skin moisture, activity, mobility, friction and shear and nutritional status.

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Conflict of Interest

All authors disclose that there was no conflict of interest.

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