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Evaluating the Methodological Approaches of Cross-Cultural Adaptation of the Bedside Handover Attitudes and Behaviours Questionnaire into Portuguese

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Abstract: Nurse managers need culturally adapted assessment instruments to support the implementation of change to Nursing Bedside Handover (NBH) in healthcare institutions. This study aimed to cross-culturally adapt the Bedside Handover Attitudes and Behaviours (BHAB) questionnaire to the Portuguese context and evaluate the methodological approaches used for this purpose. To guide this study, we followed a guideline for cross-cultural translation and adaptation measurement instruments in healthcare. The results of the content validity testing suggested that the BHAB questionnaire is a valid instrument for use in the Portuguese context. To obtain these results we showed 1) using of a new methodological approach, the dual focus, to resolve the divergences and ambiguities in the translators' committee and the multi-professional committee; 2) the lack of a conceptual definition of the construct of the instrument as a requirement to retain items with I-CVI <0.70 after validity relevance pretesting and 3) the cognitive debriefing and relevance pretesting as methodological approaches which can be used alone or together to reinforce the evaluation of cultural relevance of the items. We concluded there is a need for guidelines to support the decision-making process of healthcare researchers with comprehensive information about the different methodological approaches they can follow.

Keywords: patient handoff, nursing, questionnaire, translation, validity, methodological study

Introduction

Nursing Bedside Handover (NBH) is one of the most common and effective communication practices among healthcare professionals, particularly nurses.¹ Its implementation is classified as an intervention that allows promoting patients' participation in the delivery of nursing care.² It is associated with a concern with Patient Safety,³ and it has been documented its significant effect in the reduction of some adverse events, such as medication errors, falls and pressure ulcers.⁴ It also has a positive impact on patients' hospitalization experience, because they perceive that nurses know their situation and their progress,^{5,6} as well as their expectations and their care plans.⁷⁻⁹ Although most studies report positive effects in the involvement of patients during handover,^{5,10,11} some studies revealed contradictory results regarding the effect of sharing decision-making between nurses and patients,^{12,13} as well as nurses' resistance behaviors arising from the high number of situations in which NBH could not be performed.¹⁴ Nurses' resistance to change is defined as a behavior aimed at preventing or interrupting a given change.¹⁵ Therefore, the relevance of the involvement of Nurse Managers (NMs) in the leadership and management of the organizational change from conventional handover to NBH has been affirmed in the nursing scientific literature.¹⁶⁻²¹

The participation of NMs in the successful management of this change can be achieved with a diversity of strategies. Givens et al,⁷ reported a Quality Improvement Project (QIP) in a neuro geriatric inpatient psychiatric unit, which increased nurses' satisfaction from 5.7 to 8.3 from: 1) conducting meetings with the nursing team; 2) sharing scientific

evidence produced in similar clinical settings; 3) using a feedback board for nurses to write their perceptions about the change in the nursing station; 4) promoting an open discussion of the pros and cons of the change; 5) use of three nurses with a professional experience of more than 15 years to act as facilitating agents together with NMs in anticipating barriers and challenges, and identifying the changes to be made; 6) encouraging nurses at the door of the wards to perform NBH and 7) monitoring of satisfaction with the duration of the handover. Wollenhaup et al,²² also reported that a QIP in a postpartum unit generated a 40.34% increase in nurses' satisfaction with the performance of NBH at a private moment among nurses and another one with the parturient. The implementation of two separate moments was intended to avoid discussion and exposure of sensitive information and used: 1) two nurse facilitators trained by NMs to support and guide the team; 2) an educational program on the benefits of involving the parturient and families in the handover process; 3) the use of a structured format as a template for the NBH; 4) a guideline of the handover content fixed on computers for nurses to use for handover and 5) fortnightly follow-up meetings to obtain feedback on implementation and to provide team support.

To refine the process of NBH implementation, NMs need to use assessment instruments (scales, tests, tools, questionnaires, and surveys).²³ Using assessment instruments allows to adjust the strategies for implementing change in the organizational contexts of healthcare institutions.^{24,25} There are few assessment instruments with available psychometric information addressing NBH.²⁶ Recently, Tobiano et al,²⁷ developed an instrument to measure patients' perceptions of their participation in the NBH. Slade et al,²⁸ also, reported the development of the Nursing Bedside Attitudes and Behaviours (BHAB) questionnaire to assess nurses' attitudes and behaviors towards the mandatory implementation of NBH. Furthermore, in Portugal, there are no known studies that have culturally adapted this questionnaire to the Portuguese context, nor that aim to develop an assessment instrument to monitor nurses' practices during NBH. The BHAB questionnaire is the only available evaluation instrument targeting nurses. Adopting this questionnaire in the Portuguese healthcare organizations is important because the National Plan for Patients Safety (NPPS) 2021–2026 established the development and implementation of safe communication devices between healthcare professionals as an priority action for Portugal.²⁹

Translating and adapting assessment instruments from one cultural context to another requires following a process, which is not limited to their translation.³⁰ This process intends, mainly, to obtain an instrument equivalent to the original for the cultural context in which it is intended to be used.³¹ Typically, it involves phases of translation, synthesis of translations, back-translation, harmonization of translations, pre-testing and evaluation of the final structure.³² The latter comprises the assessment of psychometric properties and it tests the outcome of the cross-cultural adaptation process.³³ Overall, these phases include a variety of methodological strategies, such as using bilingual and bicultural translators,³⁴ performing blind translations,³⁵ using team approaches to decide on the adequacy of the translation,³⁶ on which population and monolingual subjects may participate,³⁵ using dual focus procedures,³⁷ panel of experts,³¹ focus groups,³⁸ and cognitive debriefing interviews to assess the clarity and relevance of items,³² and content validity assessment procedures.

The use of different methodological approaches improves the quality of the measurement instrument obtained.³⁹ This occurs because the use of different methodological approaches allows different types of equivalence to be achieved.⁴⁰ Herdman et al,⁴¹ classified the equivalence of measurement instruments into five categories: 1) conceptual equivalence; 2) item equivalence; 3) semantic equivalence; 4) operational equivalence and 5) measurement equivalence. Conceptual equivalence checks which domains are important for the concept in the “target culture” and their interrelationship.⁴¹ Item equivalence critically analyses the items covered by the domains of the concept.⁴¹ Semantic equivalence ensures that the translations of the items correspond semantically to the items in the original version.⁴¹ Operational equivalence seeks to ensure that the measurement methods used are appropriate in the target culture.⁴¹ Measurement equivalence verifies the outcome of the process in terms of the behaviors of the instrument.⁴¹ Without careful description of the methodological approaches used and the equivalences obtained, it is impossible to draw conclusions about the instruments that are proposed,^{42,43} without assessing the absence of cross-cultural biases.⁴⁴ These biases can result from problems of: 1) conceptual equivalence; 2) item equivalence; and 3) operational equivalence.⁴⁴

As NBH is a nursing practice that is by nature variable due to nurses' resistance^{45,46} and whose concept is not yet mature,⁴⁷ there is a need to provide comprehensive information on the process of cross-cultural adaptation of assessment

instruments to be used. Consequently, we established as objectives of this study: a) to cross-culturally adapt the BHAB questionnaire,²⁸ to the Portuguese context and b) evaluate the methodological approaches used for this purpose. The existence of an instrument culturally adapted to the Portuguese context, will allow the development of experimental studies involving the NBH as a phenomenon of study.

Methods

Study Design

This methodological study was part of a larger study with a cross-sectional exploratory research design which analyzed the psychometric characteristics of the BHAB questionnaire,²⁸ in the Portuguese population. Although there is no recognized nomenclature,^{48,49} methodological studies have been defined as studies aiming the development, testing, and evaluation of research instruments.⁵⁰ They are used to develop the reliability and validity of assessment instruments that measure constructs used as variables in research.⁵¹ Methodological studies allow to identify knowledge gaps with reference to methodological approaches and strategies for improving research practices.⁴⁸ This methodological study was based on Sousa and Rojjasnarirat's guideline.³¹ We chose this guideline because it is the most recent in the healthcare field.

Ethical Considerations

This study was conducted in a Portuguese healthcare organization with experience in implementing the NBH for more than five years. The study was approved by the Ethics Committee and followed the international guidelines of the ICN Code of Ethics for Nurses.⁵² It also followed the ethical principles established by the World Medical Association, particularly on the participants' right to refuse to take part in the study or to leave without being adversely affected.⁵³ All participants gave their written and voluntary consent to participate.

Questionnaire Description

The BHAB questionnaire,²⁸ is a 32-item self-administered questionnaire that was developed in Australia to assess nurses' attitudes and abilities to perform the NBH in a mandatory manner. The questionnaire is composed of a set of nurses' actions that characterize the NBH, divided into two subscales. The attitudes subscale has 18 items that assess nurses' level of agreement to implement a set of actions during handovers. The subscale of behaviors comprises 14 items that assess nurses' ability to perform the same actions. All items have a six-point *Likert*-type response format (1. "strongly disagree" to 6. "strongly agree") devoid of a neutral point, but with a "not applicable" point. The questionnaire also contains a third section to collect nurses' personal data, namely: a) length of professional experience as a nurse; b) length of professional experience in the hospital; 3) highest academic qualification; 4) gender; 5) age; 6) job category; 7) clinical supervision activity and 8) unit or service in which they work. To date, no study has reported the dimensionality of the BHAB questionnaire. Authors and publisher's permissions were requested to use this questionnaire.

Translation and Cross-Cultural Adaptation

The BHAB questionnaire,²⁸ was translated from English to Portuguese by two independent and bilingual translators, with Portuguese language as the mother tongue. One of the translators was familiar with the NBH, while the other did not meet this requirement and had no clinical profile. The two versions of the questionnaire in translated to Portuguese were subsequently compared with each other and with the original questionnaire by a third bilingual translator not familiar with the NBH. This translator identified the ambiguities and discrepancies existing in both translations and developed a unified translation proposal for discussion in a Translators' Committee, which brought together the two previous translators. The committee consensualized a single version of the questionnaire in Portuguese, which was subsequently translated into English. This translation was independently performed by two bilingual native English translators, neither of them familiar with the NBH and with no clinical profile. In order to identify the ambiguities and discrepancies in the translations and propose a single translation of the questionnaire into Portuguese, an expert in the area of linguistics compared the two English versions with the two Portuguese versions and the original version. The translation proposal

developed by this expert was presented and discussed in a Multiprofessional Committee composed of the translators who produced the translation to Portuguese and English, a nurse with current experience in performing the NBH, and a monolingual nurse unfamiliar with the NBH, whose mother tongue was the Portuguese. Despite being optional in Sousa and Rojjanasrirat guideline,³¹ a monolingual element was included because monolingual elements detect foreign constructions more easily than bilinguals.³⁷ The two nurses had no access to either the original questionnaire or any of its translations. In this committee, a consensus was reached on an adapted version of the BHAB questionnaire,²⁸ for use in the Portuguese population. The Translation, Translators' Committee, Back Translation, and Multiprofessional Committee included the record of the doubts and decisions made regarding the respective versions of the questionnaire.

To facilitate consensus in the Translators Committee and the Multiprofessional Committee, the dual focus technique was used, which consists of an iterative process of attention and discussion on the wording of the items in the two languages of the instrument with inputs from those familiar with the construct of the instrument. In the Multiprofessional Committee this input was obtained from the target population and monolingual nurses.³⁷ The aim of the dual focus is the consensus of all translators on the semantic and conceptual equivalence of the assessment instrument.³⁷ The role of the members familiar with the construct of the instrument is to ask questions about the different meanings of the words and to discuss more precise wordings.³⁷ In both Translators Committee and Multiprofessional Committee all divergences and discrepancies found in the items were presented for discussion. In both meetings, a member of the research team (P.C.) moderated the discussion, asking the translators to agree on the wording with the best semantic equivalence for each item. Subsequently, members familiar with the construct were asked if they had any questions or any wording suggestions that would be more suitable for the NBH construct. Dual focus may involve replacing items or parts of items with more appropriate ones in the target language in order to mitigate the difficulty of adapting certain content from the source culture.⁵⁴

Content Validity Testing

We tested the Content Validity of the adapted version of the BHAB questionnaire,²⁸ in a Portuguese hospital institution. The content validity test included a pretest to assess items' clarity and a pretest to assess their relevance. To assess the clarity of the items, we recruited a sample of 24 nurses from all units and services that use the NBH (in inpatient units of pediatrics, medicine, surgery, obstetrics, general emergency department, intensive care unit, and labor and delivery unit). We included all units and services that perform NBH because healthcare organizations comprise several specific subcultures.⁵⁵ Sample size was determined based on the desired level of expertise and on the range of knowledge representation of the panel,⁵⁶ given the number of services included in the study. For this, the head nurses of each unit or service were asked to suggest three nurses to participate. Each nurse answered an electronic questionnaire accessed through a hyperlink with the items of the adapted version of the BHAB questionnaire,²⁸ and with a dichotomous response format ("is clear" and "is not clear"). For items marked as "not clear", nurses were asked to reword the respective items in order to improve their clarity. The second pretest consisted of an Expert Panel composed of NMs from units and services using the NBH. Only NMs were included due to their role in managing the change to the NBH.^{11,57,58} A total of nine NM participated in this Expert Panel, who individually assessed the relevance of each of the BHAB questionnaire's items,²⁸ with a 4-point *Likert*-type response format (1. "not at all relevant", 2. "somewhat relevant", 3. "quite relevant" and 4. "highly relevant"). The number of experts was determined based on the desired level of expertise and the range of knowledge representation of the panel,⁵⁶ given the number of services included in the study. For the Expert Panel, one NM of each service or unit was recruited. Subsequently, the NMs were asked to qualitatively assess the relevance of the total questionnaire. In both the first and second pretests, the questionnaire was distributed by hyperlink by a nurse collaborating in the institution hosting the study. The anonymity of the answers of the nurses who took part of the two pretests was guaranteed prior the access to the online questionnaire. All experts in the two pretests were recruited through a non-probability convenience sampling method. To determine the number of experts, the criteria of the desired level of expertise and the range of knowledge representation of the panel were followed,⁵⁶ as an alternative minimum and maximum number of participants defined in the guideline by Sousa and Rojjanasrirat,³¹ since it is a questionnaire that aims to assess the practices of nurses in various subcultures. The two pretests were both conducted in May 2021.

Data Analysis

Content Validity is a psychometric characteristic that analyses the degree to which an assessment instrument reflects the domain of interest and the conceptual definition of the construct of the assessment instrument.⁵⁹ In the adapted version of the BHAB questionnaire,²⁸ Content Validity was determined by calculating the Content Validity Index (CVI) from the participants' answers in the two pretests. The CVI constitutes a method of quantifying the degree of agreement between participants who evaluated the content of the assessment instrument.⁶⁰ To determine the CVI, we first calculated the CVI of each item (I-CVI) and then the average of all the items (S-CVI) comprising the BHAB questionnaire.²⁸ These two methods were also used by the authors of the original questionnaire to assess the content validity.²⁸ The I-CVI was calculated based on the quotient between the sum of all participants' responses and the number of participants.⁶¹ To calculate the average of all items, we used two approaches: 1) the average of the CVI indices (S-CVI/Ave), and 2) the universal agreement index (S-CVI/UA). For the determination of the S-CVI/Ave we used the following formula: $S-CVI/Ave = (\text{sum I-CVI scores})/(\text{number of items})$.⁶¹ The S-CVI/UA was obtained from the following formula: $S-CVI/UA = (\text{sum of UA scores})/(\text{number of items})$.⁶¹ In this study, we used both approaches to increase confidence in the content validity of the BHAB questionnaire.²⁸ Because CVI and UA are suitable for dichotomous-type responses, in the relevance pretest the responses were recoded as 0 (for responses 1 and 2) and 1 (for relevance responses 3 and 4).⁶¹ To calculate the S-CVI/UA the responses were further recoded into 0 in situations where there was not 100% agreement between the participants and into 1 when there was 100% agreement. As reference values, we adopted the minimum value of 0.50 for the I-CVI,⁶⁰ 0.80 for the S-CVI/UA and 0.90 for the S-CVI/Ave.⁶² An assessment instrument has excellent content validity when it simultaneously has adequate I-CVI and S-CVI values.^{62,63} Items with I-CVI values less than 0.79 are considered as "candidates to be revised" (if I-CVI between 0.78 and 0.71), or "candidates to be eliminated" (if I-CVI less than 0.70), or mandatorily eliminated (if I-CVI less than 0.50).⁶⁰ The original authors of the BHAB questionnaire reported I-CVI>0.78 on all items and S-CVI>0.90 on each of the subscales.²⁸

Results

The process of cross-cultural adaptation of the BHAB questionnaire,²⁸ followed the guideline of Sousa and Rojjanasrirat.³¹ To produce an adapted version of the BHAB questionnaire,²⁸ which was equivalent to the original version, the existence of ambiguities and discrepancies after the translation and back translation of the instrument were investigated. In the translation of the BHAB questionnaire,²⁸ into Portuguese, 11 semantic ambiguities and six discrepancies in the translation of the items were identified. In relation to the response format, no ambiguities and discrepancies were found. Most discrepancies involved specific NBH terms, such as "handover", "incoming nurses" and "treatment plan". Semantic ambiguities resulted from the diversity of meanings in the translation of English words and phrases, such as the verb "react to", which in Portuguese can mean respond or react. All ambiguities and discrepancies resulting from the translation were resolved by discussion and consensus in the Translators' Committee using the dual focus technique (Table 1). The contributions of the translator familiar to the NBH were crucial to solve the discrepancies, while the ambiguities had more contributions from the translator with no clinical profile. In the back translation of the questionnaire into English, 10 semantic discrepancies and three ambiguities were identified, two of which were conceptual. The conceptual ambiguities were identified in item a6 "outgoing nurses should ask incoming nurses for clarification and confirmation of information discussed" and c4 "as an outgoing nurse, I introduce myself and each member of the incoming team". The conceptual ambiguity of item a6 was related to the concept of Safe Communication characterized by a clarification and validation of the accuracy of the interpretations made,⁶⁴ and in relation to which, only outgoing nurses could clarify the information discussed in the handover. The item c4 had two possible meanings: a) the nurses who are leaving the shift introduce themselves to the incoming team or b) introduce the patient to the incoming team. The conceptual ambiguity of this item involved the concept Nursing Transfer of Accountability at the Bedside,⁶⁵ and the concept Patient Involvement during NBH.^{66,67} These two ambiguities were clarified by email with one of the authors of the original questionnaire (J.P.). Relating to the item c4 it was clarified that the behavior assessed in this item indicates the presentation of the patient by the outgoing nurse to each incoming team member. All semantic discrepancies and ambiguities were resolved in the Multiprofessional Committee by discussion and consensus using the dual focus technique (Table 2). The target population nurse and the monolingual nurse both had an active role in the construction of the final wordings of the BHAB questionnaire items. For a comprehensive analysis of all versions produced in each stage of the cross-cultural adaptation process for the 32 items of the BHAB questionnaire,²⁸ see [Table S1](#).

Table 1 Solutions Adopted by the Translators' Committee* for the Ambiguities and Discrepancies Found in the Translations of the BHAB Questionnaire

Items	Ambiguity or Discrepancy	Solution	Justification
a1, c1	The verb "greet" may mean "cumprimentar" or "tratar" (speak to)	"tratar"	Treating supposes an individualising intention
a2	The verb "need" may mean "necessidade" or "dever" (strong need)	"necessidade"	The "eye contact" of nurses is not an obligation
a3, a11, a13, a15, c2, c5, c8, c11, c13	The word "handover" was translated by "transferência" and by "passagem de turno"	"passagem de turno"	Idiomatic expression in Portuguese language
a4, a6, a13, a14, c10	The word "discussion" may mean "debate" or "discussão"	"discussão"	During handover nurses can discuss with patients the plan of care for the shift
a5, c4, c5, c14	The word "incoming nurses" was translated by "enfermeiros que entram de serviço" and by "enfermeiros que entram de turno"	"enfermeiros que entram de turno"	Alignment with the translation of the word "handover" by "passagem de turno"
a7, a15, a16, a18, c5, c11, c12, c14	The word "outcoming nurses" was translated by "enfermeiros que saem de serviço" and by "enfermeiros que saem de turno"	"enfermeiros que saem de turno"	Alignment with the translation of the word "handover" by "passagem de turno"
a8, c7	The verb "listen to" may mean "ouvir" or "escutar"	"escutar"	Patients can make important contributions to the continuity of care
a9, c7	The verb "react to" may mean "reagir" or "responder"	"responder"	Patients can ask questions or raise concerns during handover
a10	The statement "there is no need" may mean "nurses shouldn't use"	"os enfermeiros não têm necessidade"	Nurses can use or control their non-verbal communication during handover
a11, a12	The verb "need" may mean "necessidade" or "dever" (strong need)	"dever"	Nurses' attention to feelings and concerns was considered a duty during handover
a11	The verb "look for" may mean "procurar" and "pesquisar" or can have the meaning of "be aware of" or "estar atento"	"estar atento"	It is necessary to be aware of the patients' reactions during handover, especially when the information is not positive
a12, c9	The word "notes" which can mean "notas de enfermagem" or "registos de enfermagem"	"registos de enfermagem"	The term "registos de enfermagem" is more comprehensive than "notas de enfermagem"
a16, c12	The expression "presenting condition" was translated by "presente condição" and by "quadro clínico de apresentação"	"presente condição"	The "presente condição" is more comprehensive than "quadro clínico de apresentação"
a16	The verb "need" may mean "necessidade" or "dever" (strong need)	"dever"	The explanation of the "condição presente" is a way to communicate complete, accurate and timely information
a17, c13	The verb "refer to" may mean "referir", "mencionar" or "consultar"	"consultar"	Nurses may need to access records
a18, c14	The words "treatment plan" were translated as "plano de tratamento" and "plano de cuidados"	"plano de cuidados"	The term "plano de cuidados" is more comprehensive than "plano de tratamento"
c2	The word "position" was translated as "posição" e "local"	"local"	Depending on where nurses are positioned, it will be easier or more difficult for patients to see, hear and participate

Note: *The Translators' Committee included three bilingual translators with Portuguese as their mother tongue, one of whom was familiar with the NBH.

When testing the content validity, it was followed the current good practice of describing the process, the participants' personal data, and the results found.⁶² Regarding the process, the performance of a Cognitive Debriefing in the clarity pretest was not planned because it was not clear in the guideline followed the advantages of its use.³¹ The need for the Cognitive Debriefing subsequently arose with a number of responses that were only comments rather than suggested improved wording for the not clear items. As the guideline advocates a sample size of 10–40 participants to conduct the clarity pretest,³¹ we chose to perform the content validity testing via an electronic questionnaire. The anonymity of the questionnaire prevented us from exploring

Table 2 Solutions Adopted by the Multiprofessional Committee* to the Ambiguities and Discrepancies Found in the Back-Translations of the BHAB Questionnaire

Items	Ambiguity or Discrepancy	Solution	Justification
a2	The expression “make eye contact” was translated as “ter” and “fazer contacto visual”	“estabelecer contacto visual”	The term “estabelecer” is more common in Portuguese than “ter” and “fazer”
a2	The verb “need to” (“necessitam”) may mean “necessidade” or “necessidade forte”, according to whether it is a desirable conduct or an imperative norm	“necessidade”	It was considered that this is a desirable behaviour as patients may refuse to participate in the handover
a3, c2, c5, c8, c11, c13	The term “passagem de turno” was translated by “change shift” and “handover”	“handover”	The term “handover” is commonly used in the English hospital context
a3	The verb “permitir” was translated by “allow” and “enable”	“allow”	It was considered that “allow” conveys the idea that nurses manage information during handover
a6	Conceptual divergence in “os enfermeiros que estão de saída de turno devem pedir aos enfermeiros que entram para esclarecer as informações discutidas”	“para validarem as informações discutidas”	Only nurses leaving shifts can clarify incoming nurses
a10, a17	The expression “It is not necessary for nurses” was translated as “os enfermeiros não têm necessidade”	“não há necessidade de os enfermeiros”	Maintains the neutrality and formal coherence of the original: “It is not necessary”
a11	The statement “os enfermeiros devem estar atentos” was translated as “nurses must be careful” and “nurses should be attentive”	“estar atentos”	It’s closer to “nurses should look for”
a12	The statement “os enfermeiros devem estar atentos” was translated as “nurses must be attentive” and “nurses should be attentive”	“necessidade”	Verbalisation of patients’ concerns are a form of participation in the handover
a12	Semantic ambiguity in “particular patient concerns” due to the ordering of the English idiomatic possessive “particular”	“preocupações específicas do cliente”	The English word “particular” here refers to the patient’s concern, meaning something that is of particular concern to him/her
a16, c12	The expression “presente condição do cliente” was translated as “apparent clinical condition” and “patient’s clinical picture”	“estado clínico atual”	It was decided that it is more common in clinical Portuguese
a18, c13	The term “registos médicos” was translated as “patient’s medical records” and “patient’s medical records”	“registos clínicos do cliente”	Patient clinical records include medical and nursing records
a18, c14	The statement “devem ter em atenção no próximo turno” was translated to “nurses on the next shift must keep in mind” and “look out for on the next shift”	“devem monitorizar no próximo turno”	The verb “monitorizar” is commonly used by nurses to designate what needs to be monitored
c3	The term “informação médica” was translated to “medical information” and “medical details”	“informação clínica”	The term “informação clínica” is more comprehensive

Notes: *The Multiprofessional Committee included four bilingual translators (two with a mother tongue in Portuguese, and two in English), a nurse with current experience in performing the NBH, a monolingual nurse and a linguistic professional.

participants’ comments through a Cognitive Debriefing. This consists of an interview conducted individually with a set of participants after they have responded to the assessment tool.^{32,68} It is a qualitative approach,⁶⁹ that allows researchers to assess: 1) the meaning; 2) understanding, and 3) cultural relevance of each item of the adapted instrument.⁷⁰ The assessment of cultural relevance comprises the identification of erroneous assumptions concerning the target population on which the instrument is to be used.⁷¹ Because it involves a sample size of 10–40 subjects,³¹ it can be a time-consuming pretest.⁷² Regarding the number and qualifications of the participants, they were considered adequate. The personal data of the participants can be seen in [Table S2](#).

In the clarity pretest all items presented I-CVI values ≥ 0.93 and were considered clear (100%). There were only four items with some disagreement among the participants, namely: a13 “é aceitável usar exemplos pessoais ou humor na discussão da passagem de turno”, a16 “é necessário que os enfermeiros que estão de saída de turno expliquem o estado

clínico atual do cliente”, a18 “é necessário que os enfermeiros que saem de turno, expliquem o plano de cuidados e o que os enfermeiros que entram, devem monitorizar no turno”, and c14 “como enfermeiro que está de saída de turno, sou explícito em relação ao plano de cuidados e ao que os enfermeiros devem monitorizar” (all with values of I-CVI=0.96). Wording suggestions were obtained for these items, which were analyzed by two nurses collaborating in the study, who were NMs in the institution where the study was carried out, and who decided not to modify any item. Some of the suggestions made by the participants were comments, which did not include drafting proposals, such as “it is necessary them to listen but not during handover, in my opinion”, “depending on the situation, it may be necessary to use non-verbal communication” and “in my opinion, it is not the right time, for the patient to contribute”.

Regarding the items’ relevance, the I-CVI ranged between 0.56 and 1.00, of which 29 had an I-CVI>0.78. It was achieved a I-CVI<0.70 in three items, namely: a13 “é aceitável usar exemplos pessoais ou humor na discussão da passagem de turno” (I-CVI=0.56); a15 “os enfermeiros que estão de saída de turno devem iniciar a passagem de turno identificando o cliente, o seu médico e a razão pela qual está no hospital” (I-CVI=0.67), and c11 “como enfermeiro que está de saída, início a passagem de turno identificando o cliente, o seu médico e a razão pela qual está no hospital” (I-CVI=0.67). Apart from the previous items, most were considered relevant (91%). For the total questionnaire, adequate content validity indices were obtained in both pretests (S-CVI/Ave>0.90 and S-CVI/UA>0.80). As the NBH concept is not a mature concept,⁴⁷ all items with I-CVI<0.70 were the subject of discussion between the research team and two of the study nurses who were NM at the institution where the study was conducted. It was decided to retain these items as they measure nurses’ attitudes and behaviors that are seen as important and are often undervalued during the performance of the NBH and consequently require high need for improvement.

Discussion

This study aimed: a) to cross-culturally adapt the BHAB questionnaire,²⁸ to the Portuguese context and b) evaluate the methodological approaches used for this purpose.

Cross-Cultural Adaptation of BHAB Questionnaire

The cross-cultural adaptation of assessment instruments is a complex and iterative process,⁷³ aiming to identify differences between the “source culture” and the “target culture”,³² requiring a rigorous assessment of divergences and ambiguities in all steps.³¹ These divergences and ambiguities may be of semantic and conceptual nature,³⁰ and translate the dimensions of analysis of the equivalence between the versions of the assessment instruments.⁴¹ In this study, we found a higher number of semantic divergences than ambiguities after back translation. This may be explained by the use of a blind back translation, in which the translators had no contact with the original assessment instrument.³⁵ Contrarily, after translation, the number of semantic ambiguities observed was higher than the number of divergences. The variety of options that translators have when translating a word or expression from one language to another may be one explanation.³⁶ After back translation, two conceptual ambiguities were also identified. The back translation of assessment instruments amplifies wording with conceptual errors.⁷⁴ The identified ambiguities and divergences were eliminated through a Translators’ Committee and a Multiprofessional Committee. These approaches increase semantic and conceptual equivalence between the original and adapted versions of the assessment instruments.³⁶ Two conceptual ambiguities were clarified by one of the authors of the original assessment instrument. Contact with the authors of the original instruments is recommended to increase conceptual equivalence and avoid cross-cultural biases.³¹ The clarification obtained was essential due to: 1) the lack of knowledge about the dimensionality of the assessment instrument,⁴⁷ and 2) the fact that the NBH is not yet a mature concept with clearly defined attributes.⁴⁷ When the literature does not provide enough details about an assessment instrument, it is useful to contact the authors to clarify the doubts that arise during the cross-cultural adaptation process.⁷⁵

Some contingent factors affected the use of some methodological approaches outlined in Sousa and Rojjanasrirat’s guideline.³¹ Due to the unavailability of resources, none of the translators who performed the back translation of the BHAB questionnaire,²⁸ were familiar with the NBH. To address this difficulty, we recruited a nurse from the host hospital institution to include a Multiprofessional Committee. For this committee, the guideline of Sousa and Rojjanasrirat,³¹ establishes only the inclusion of a healthcare professional without specifying any other requirement that characterizes him/her. With respect to the translators who translated and back translated the instrument, the guideline specifies that one of the translators at each stage should be familiar with the health terminology and the construct of the assessment instrument. The contributions of this nurse were, in

most situations of the Multiprofessional Committee, decisive in achieving consensus among the translators. According to Bornman et al,³⁵ subjects from the target population to whom the assessment tool will be applied should participate in the Multiprofessional Committee so that decisions are not exclusively made based on linguistic equivalence. The inputs of the members of the target population in the Multiprofessional Committee ensure conceptual equivalence between the original and the adapted versions of the assessment instruments.⁷⁶

We used a technique that is not established by Sousa and Rojjanasrirat's guideline,³¹ and that allows resolving the divergences and ambiguities found in the Translators' Committee and the Multiprofessional Committee. This is a decision procedure regarding the items' translation and takes into account both semantic equivalence and conceptual equivalence, called dual focus.^{37,77} Its use may be important in nursing studies due to the use of terminology which is specific to nurses' professional culture in assessment instruments and with which translators may not be familiar. Dual focus was instrumental, in this study, in translating and adapting into Portuguese the terms "handover" (a3, a11, a13, a15, c2, c5, c8, c13), "incoming nurses" (a5, a18, c5, c14), "patient progress" (a5), "outgoing nurses" (a6, a15, a16, a18, c4, c5, c11, c12, c14), "notes" (a12, c9), "presenting condition" (a16, c12), "patient's medical notes" (a17, c13), "treatment plan" (a18, c14) and "medical information" (c3, c13). It was also important to translate and adapt "Bedside Handover" from the title of the questionnaire, which is an idiomatic expression. Idiomatic expressions are combinations of words, which have a specific cultural meaning different from their literal meaning,⁷⁸ and which are not easy to translate into another language.⁷⁹ Therefore, they tend to be either borrowed from or adapted to the "target language".⁸⁰ One of the strategies that may be used in the cross-cultural adaptation of idioms is the identification of comparable idioms in the "target language".⁸¹ In Portugal, the expressions "passar o turno" and "passar ocorrências" are used to define the transmission of information between nurses between their working shifts. The consensus obtained for the international term 'Bedside Handover' was also based on the expressions "enfermeiro de cabeceira" and "cabeceira do cliente", which are also used in other cultures to refer to the proximity of nurses to patients. Based on this, Nursing Bedside Handover was adapted as the "Passagem de Turno à Cabeceira do Cliente".

Using the dual focus allowed to adopt a centring approach during the cross-cultural adaptation process, which is not sufficiently explained in Sousa and Rojjanasrirat's guideline.³¹ This methodological approach considers the adapted version to be as important as the original version of the assessment instrument in order to allow for the replacement of complete and/or the parts of items, ensuring the content validity.^{76,82} To promote the use of dual focus in the Multiprofessional Committee, we streamlined the discussion on the translation of the items in the following sequence: 1) opinions of the translators one by one (semantic equivalence); 2) opinions of the member acquainted with the NBH (conceptual equivalence) and 3) consensus reached by the committee (semantic and conceptual equivalence). In the Translators' Committee, the sequence was similar. Dual focus can lead to the complete or partial replacement of parts of items by others more appropriate to the "target culture".⁸³⁻⁸⁸ However, none of the items in the BHAB questionnaire,²⁸ had a complete replacement in this study. All methodological approaches used in the cross-cultural adaptation of the BHAB questionnaire,²⁸ were rigorously followed. Although, some of them are not included in the Sousa and Rojjanasrirat's guideline,³¹ we evaluated them as adequate to obtain a conceptual equivalence between the original and adapted questionnaire.

Analysis of the Content Validity of the Adapted Version

In the assessment of the Content Validity of the adapted version of the BHAB questionnaire,²⁸ we described the process, the participants' personal data, and the results obtained.⁶² In the relevance pretest, I-CVI values considered as "candidates to be eliminated",⁶⁰ were observed in items a13, a15, and c11 (I-CVI<0.70). These items characterize the NBH with the possibility of: 1) the use of self-disclosure and humor (a13) and 2) of the introduction of the handover of each patient with the identification of the patient and his/her doctor, and the reason for hospital admission (a15 and c11). The experts' low agreement regarding item a13 may be explained by the fear that self-disclosure may question the limits of the nurse-patient relationship.⁸⁹ Self-disclosure is a communication technique that can be verbal and non-verbal, intentional or not revealing something personal to nurses.⁹⁰ Its use by nurses can be useful if it is carefully applied.⁹¹ When it is used appropriately, it is recognized as a characteristic of effective communication.⁹² Contrarily, the absence or excess of self-disclosure by nurses constitutes characteristics of ineffective communication.⁹² Personal information disclosed may relate to: 1) close family members; 2) activities and interests; 3) life experiences, and 4) personal opinions.⁹³ The purpose of using self-disclosure is to support patients' experience rather than belittle or devalue it,⁹⁴ through a therapeutic bond with nurses.⁸⁹ Its use in nursing is reported, for example, in obstetrics,⁹⁵ cardiology,⁹⁶

and oncology units.⁹⁷ Regarding humor, the low agreement of the experts may be justified by the fear of negative reactions from patients or even the loss of mutual respect.⁹⁸ Humor also aims to improve nurse-patient relationship,⁹⁹ and communication.¹⁰⁰ It is used by nurses, for example, in oncology,¹⁰¹ paediatric,¹⁰² and nursing homes.¹⁰³

In turn, the experts' low agreement in items a15 and c11 may be explained by the consultation of nurses' electronic documentation as a source of information during the NBH.^{104–106} In the hospital institution that hosted this study, consulting the electronic documentation is performed during the NBH through a laptop computer, which is mobilized through the wards. Consequently, the nurses' access through the electronic documentation systems to information about the patient's identity, the doctor, and the reason he/she is in the hospital may make it irrelevant to repeat it during the NBH. In a study conducted by Johnson et al, who developed an electronic documentation system to be accessed during NBH, only included bed information, patient identification, and the reason for hospital admission.¹⁰⁷ The possibility of consulting the electronic documentation during the NBH allows the documented information not to be repeated verbally and allow nurses to focus the NBH on updating and discussing the plan of care.¹⁰⁸ The identification of the patient's physician is much less reported information during handovers than the patient's name and the reason for admission.¹⁰⁹ Furthermore, the I-CVI values of items a15 and c11 can also be explained by the possibility of breach of confidentiality of patient information due to the presence of other patients and family members during the NBH, namely regarding medical diagnosis information,¹¹⁰ and regarding sensitive information about test results.¹¹¹

Items with I-CVI<0.70,⁶⁰ items a13, a15, and c11 were not eliminated after the pretest of relevance. Two factors that hindered the decision to eliminate these items were 1) the lack of a conceptual definition of the NBH describing its attributes,⁴⁷ and 2) the unfamiliarity of the dimensionality of the BHAB questionnaire.⁴⁷ One conceptual definition we found resulted from a conceptual analysis of the concept of handover in nursing, which did not include the NBH.¹¹² The absence of a conceptual definition of the construct to be assessed by the assessment instrument makes it difficult to interpret the results and perform useful critical analyses of the instrument on its conceptual basis.¹¹³ According to Morse and Carter,¹¹⁴ a well-defined concept should include its main delimited attributes and specified preconditions and outcomes. As a result of the absence of a conceptual definition for the NBH and the dimensionality of the BHAB questionnaire,²⁸ the researchers were unable to envision whether the deletion of the mentioned items could threaten the conceptual equivalence between the adapted and original versions of the BHAB questionnaire.²⁸ When two versions of an assessment instrument are partially equivalent in the construct being measured by two different cultures, construct bias is said to exist.¹¹⁵ Haynes et al argue that the content validity procedures, as well as the content validity indices obtained, should be treated as categories of construct validity of the assessment instruments and should be reported systematically and in the same detail as other elements of construct validation.¹¹⁶ Achieving I-CVI values of less than 0.70, the researchers inferred that the content validity assessment of the adapted BHAB questionnaire,²⁸ requires a rigorous refinement process of the construct domain using a larger sample size and statistical methods to know its internal structure. Recent studies recommending a flexible,^{58,117,118} and adaptive¹¹⁹ implementation of the NBH rather than a mandatory implementation support the need for refinement of the domain of the NBH construct.

Strong conceptualization of the construct is a fundamental requirement for obtaining acceptable I-CVIs.^{63,120,121} This element plays a key role in assessing content validity because it provides information about the conceptual and operational definition of the construct and what the instrument measures.¹²² In addition, experts need to be carefully selected,¹²⁰ and have a beforehand conceptual and operational definition of the instrument's construct.¹²³ The operational definition identifies either empirical referents or indicators of the construct that can be observed and measured, while the theoretical definition defines a construct in relation to other constructs.¹²⁴ In the pre-test of relevance, the experts were the NM of each of the services in which the NBH was implemented. Therefore, the researchers considered the experts qualified for the relevance assessment of the items, but they did not hold any conceptual or operational definition of the NBH construct. This requirement was not considered by the researchers because it was not specified in the guideline by Sousa and Rojjasnarirat,³¹ followed in this study. Nevertheless, the poor conceptualization of the NBH construct identified as a gap in the field of research on NBH implementation,⁶⁷ would prevent the researchers from ensuring that this requirement was met in the pre-test of relevance. As a result, the researchers considered the methodological approach of reviewing the items with NMs from the target population to be an acceptable approach given the current state of conceptualization of the NBH construct.

Retaining items with an I-CVI<0.70, met the standards which suggest that only I-CVI values below 0.50 are unacceptable, and is in line with the variable nature of the NBH,¹ and with the purpose of the BHAB questionnaire to assess the implementation of

the NBH in hospital institutions.²⁸ Some studies have found that the NBH is performed differently than drawn,⁴⁶ and that it is not always performed or only involves introduction to the patient and the nurse starting the shift.¹²⁵ This variability has been reported in relation to individual nurses' practices, in relation to the duration of the NBH, the method used, the location of performance and the information passed on and shared with patients.¹²⁶ In some studies, inconsistencies in the implementation of NBH by both nurses and patients have been reported.^{125,127} Malfait et al,¹⁹ in a study, which aimed to determine the existence of differences in compliance in the application of a structured NBH protocol in 12 different services, found a unilateral decision by nurses not to perform NBH in almost 30% of the cases observed. They also found that in 1/3 of the cases where NBH was performed, nurses did not actively involve patients. This was interpreted as an indicator of nurses' resistance.¹⁴ Resistance to the use of NBH had already been identified in previous studies for two reasons: 1) NBH causing outgoing nurses to leave their shift later and causing incoming nurses to be late in their work,^{128,129} and 2) the possibility of breaching the confidentiality of patient information.¹²⁹ Consequently, ensuring consistent implementation of NBH is a major challenge for NMs.⁵⁸

This methodological approach to values of I-CVI < 0.70 was not specified in the Sousa and Rojjanasrirat's guideline,³¹ but was considered as adequate for the NBH implementation field of study.

Limitations and Recommendations

The present study has some limitations. Firstly, the similarity of the items relating to attitudes and behaviors may have introduced a possible habituation bias in the responses of the pre-test participants. This type of bias is generated by the possibility that subjects respond equally to very similar questions.¹³⁰ Secondly, the use of electronic questionnaire in the clarity pretest preventing us from exploring the comments made by the participants to some of the items to evaluate their cultural relevance for the target population. This evaluation was carried out in the relevance pretest. Thirdly, we did not evaluate the factorial structure of the Portuguese-adapted version. As a line of future work, we intend to continue to refine the content validity of the BHAB questionnaire,²⁸ during the psychometric validation of the instrument. Lastly, it is imperative to keep in mind that there are cultural and linguistic differences between the European Portuguese and the Portuguese spoken in the Portuguese Language Countries and this adaptation was made into European Portuguese. Portuguese is the sixth most widely spoken language in the world.¹³¹ It is the official language of Portugal, Brazil, Angola, Mozambique, Guinea-Bissau, São Tomé and Príncipe, Cape Verde and East Timor,¹³¹ which together form the Community of Portuguese Language Countries.¹³² We recommend the cross-cultural adaptation and validation of BHAB questionnaire in Portuguese-speaking countries. The future development of multicentric projects in Portuguese-speaking countries is only possible if there are assessment instruments culturally adapted to the contexts of these countries.

Conclusions

We conclude that given the state-of-the-art regarding the conceptualization of the NBH construct, the BHAB questionnaire is a valid content assessment instrument. Furthermore, this study showed, to improve the semantic and conceptual equivalence between the original and adapted versions of assessment instruments, researchers can make decisions that differ from the guidelines established. In other words, the use of a guideline guiding the process of translation and cross-cultural adaptation does not mean that researchers do not add or replace methodological approaches considered by others more suitable for the study in progress. This depends on the comprehensiveness and depth of the researcher's knowledge of methodological approaches to cross-cultural adaptation. Researchers' methodological knowledge is essential to enhance decision-making and understanding about the purposes, procedures, techniques, and criteria to be used, whether or not they are included in the guidelines.

In particular, this study showed that the use of conceptual and operational definitions of the construct to be measured by the instrument is a key requirement to avoid cross-cultural biases and to ensure conceptual equivalence during the cross-cultural adaptation process. To achieve this equivalence, it also showed the relevance of the dual focus technique during the Translators Committee and the Multiprofessional Committee, as well as the inclusion of a monolingual element in this latter. In addition, it showed the importance of complementing the Cognitive Debriefing with the clarity pretest to explore the item wording suggestions. Regarding the definition of the number of experts in the pretests, an alternative criterion of the minimum and maximum number of participants, based on the desired level of expertise and the range of knowledge representation of the panel,⁵⁶ was also shown to be more suitable for assessment instruments intended to evaluate the practices of professionals in various subcultures. Finally, it was also shown that the elimination of items with I-CVI < 0.70 may not be a mandatory criterion in relation

to instrument constructs with a weak conceptualization and where instruments aim to monitor practices susceptible to variability. This study shows novice researchers that the use of methodological approaches to cross-culturally adapt assessment instruments must be carefully selected from the construct of the instrument whose equivalence one wants to obtain. Guidelines with comprehensive information about the different methodological approaches are needed to support decision-making process of healthcare researchers, especially novice researchers.

Data Sharing Statement

All data analyzed during this study were included in this published article and its additional files.

Ethics Approval and Informed Consent

Ethical approval was obtained from the Ethics Committee from the Hospital de Cascais Dr. José de Almeida [Approval No 5/CE from 03/31/2021]. Before being included in the study, all participants received written and oral information and signed an informed consent form.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

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