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Measuring the Self-Efficacy of Health Professionals for Practicing Hand Hygiene and Using Gloves: Development and Validation of an Instrument

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Abstract: Adherence to hand hygiene procedures and the use of gloves is a problem that deserves to be analyzed from an individual and organizational point of view. For this, we aim to develop and validate an instrument for measuring the self-efficacy of health professionals for practicing hand hygiene and using gloves. We evaluated the metric properties of validity and reliability for measuring the self-efficacy of health professionals for practicing hand hygiene and using gloves. Fifteen health and education professionals formed the judges committee to construct the instrument for measuring the self-efficacy of health professionals for practicing hand hygiene and using gloves. Moreover, 362 nursing professionals participated in this study that was carried out from 2017 to 2020. The construct validity by known groups was confirmed by comparing the means of self-efficacy of the self-efficacy of health professionals for practicing hand hygiene and using gloves with the variables sex and unit of activity. The convergent construct validity showed a weak correlation between the scores of the self-efficacy of health professionals for practicing hand hygiene and using gloves instrument, and the perceived general self-efficacy scale. This instrument is easy to apply and can be used in the assessment of behavioral determinants, regarding hand hygiene and the use of gloves, in other health professionals, considering the generalization and scope of the items.

Keywords: behavior; health personnel; infection control; instrument development; nurses; nursing; psychometrics

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1. Introduction

Hand hygiene and the use of gloves are fundamental measures to prevent and control microbial transmission [1–4]. However, the use of gloves is often pointed out as a barrier that hinders the proper practice of hand hygiene [1,4–6]. Some researchers suspect that this behavior is motivated by the desire for personal safety [5–8]. In this sense, Baloh et al. [4] reinforce the use of gloves as a barrier to compliance with hand hygiene, as health professionals generally use gloves for their own protection and sanitize their hands mainly to protect the patient.

Adherence to the basic principles of asepsis is a historical problem that, even today, deserves to be analyzed from an individual and organizational point of view. Breaking with the difficulty of adhering to these good care practices is undoubtedly a challenge faced by health institutions worldwide [5–8].

The concept of self-efficacy seems promising to us to explore the topic at hand, considering that it refers to the belief that the individual has about his/her ability to successfully perform a certain activity. It is a subjective construct, which can be measured with a measuring instrument [9–11].

In the scientific literature there is no evidence of a validated instrument that simultaneously measures the self-efficacy of health professionals for practicing hand hygiene and using gloves. Initiatives to identify failures and critical points most likely to occur in patient care and safety in health care environments are essential for the development of preventive actions aimed at improving this entire process.

In a brief historical review on the subject, it is possible to verify that, admittedly, hand hygiene is the simplest and least expensive individual measure to prevent microbial spread. Despite advances in infection control and the increase in hospital epidemiology, health professionals' adherence to recommended hand hygiene practices remains unacceptably low. It is worth mentioning that in 1840, Ignaz Philip Semmelweis demonstrated the importance of hand hygiene in the microbial transmission control [1,12].

However, researchers and health professionals emphasize the fact that the hand hygiene procedure and the use of gloves are closely related to clinical practice, thus requiring integrated investments to improve the current situation. Undoubtedly, investments in improving hand hygiene also require behavioral changes from health professionals regarding the use of gloves.

The use of gloves is often pointed out as a barrier to hand hygiene [5], even though gloves are generally used. In health care routines, the use of gloves must be based on the assessment of the risk of exposure to potentially contaminated blood and body fluids and must also consider the specific recommendations and current legislation [5,6,13].

According to the World Health Organization (WHO), several interventions are used in an attempt to improve adherence to hand hygiene among health professionals. In this sense, of the 76 studies included in the period 1981 to 2008, few results showed improvement in this situation, including those that were sustained in the long term, and that are associated with the implementation of these programs [14].

It must be considered that the practice of hand hygiene, in terms of adherence, is a complex issue influenced by institutional, cultural, professional, and personal factors. Despite the existence of guidelines for hand hygiene, cognitive, social, motivational, behavioral and awareness aspects play an important role in adherence to this very important practice for the health area [12,15–18].

Some justifications for the low adherence of health professionals to hand hygiene recommendations include being a doctor or nursing assistant; male gender; working in an intensive care unit (ICU); working during the week versus the weekend; use of gloves and apron; carry out activities with a higher risk of cross microbial transmission; and high workload [1,19]. Furthermore, Pittet [12] adds that adherence to hand hygiene varies between different sectors of the hospital, between professional categories, according to working conditions, time of day or week, type and intensity of patient care, and definitions employed in different studies.

There are also complaints of dermatological problems such as irritation, dryness or other lesions on the health professional's skin; forgetfulness; lack of knowledge of guidelines; lack of awareness of the risk of acquiring infection; insufficient time for hand hygiene; work load; lack of staff; use of gloves; failure in training as a belief that the use of gloves does not require hand hygiene; lack of institutional stimulus; lack of active institutional participation; lack of adequate examples in the work team or leadership; neglect and little motivation [1,12,14,17,19–24].

Risky behavior with the use of gloves is similar to neglecting the practice of hand hygiene. The erroneous idea that gloves completely protect the hands is inferred. Gloves are not a fully effective barrier against microbial contamination, body fluids and chemicals. Remember that some gloves may have microscopic imperfections, but they provide a false sense of security. Gloves can also contaminate hands due to the presence of micro-holes or

when improperly removed, which justifies hand hygiene immediately after removal. In fact, the protocols recommend that hand hygiene be performed before and after contact with patients, as well as the placement and removal of gloves [17].

Some social cognitive models (Health Belief Model, Health Locus of Control, Theory of Motivation in Protection, Theory of Planned Behavior and the Self-Efficacy Model) were applied to assess predictors of health behavior. However, few studies have applied these models to assess the perceptions of health professionals regarding infection control practices [25].

The dynamics of behavior change are complex and multifaceted. It involves a combination of education, motivation, and system change. Widespread dissemination of hand hygiene and glove use guidelines alone is not sufficient motivation for behavior change [1,26,27].

In this study, the term "gloves" refers to non-sterile procedure gloves used in health care as part of personal protective equipment (PPE) for all potential or expected exposures to blood and body fluids. According to the importance and complexity of this theme, some questions arise and support this research:

1. What are the determinants (enablers and hindrances) for measuring the self-efficacy of health professionals for practicing hand hygiene and using gloves?
2. Is the developed and validated instrument reliable for measuring the self-efficacy of health professionals for practicing hand hygiene and using gloves?

The aim of this study was to validate an instrument for measuring self-efficacy for practicing hand hygiene and using gloves among nursing professionals in a Brazilian hospital institution.

2. Materials and Methods

This is a methodological study that evaluated the metric properties of validity and reliability for measuring the self-efficacy of health professionals for practicing hand hygiene and using gloves (SEHP-HHG). The theoretical framework used was that of Albert Bandura [28] based on the Social Cognitive Theory (SCT). The study was carried out from 2017 to 2020.

The methodological process of psychometric validation of the SEHP-HHG instrument involved the following stages: face and content validation, pre-test and evaluation of the instrument's validity and reliability (Figure 1).

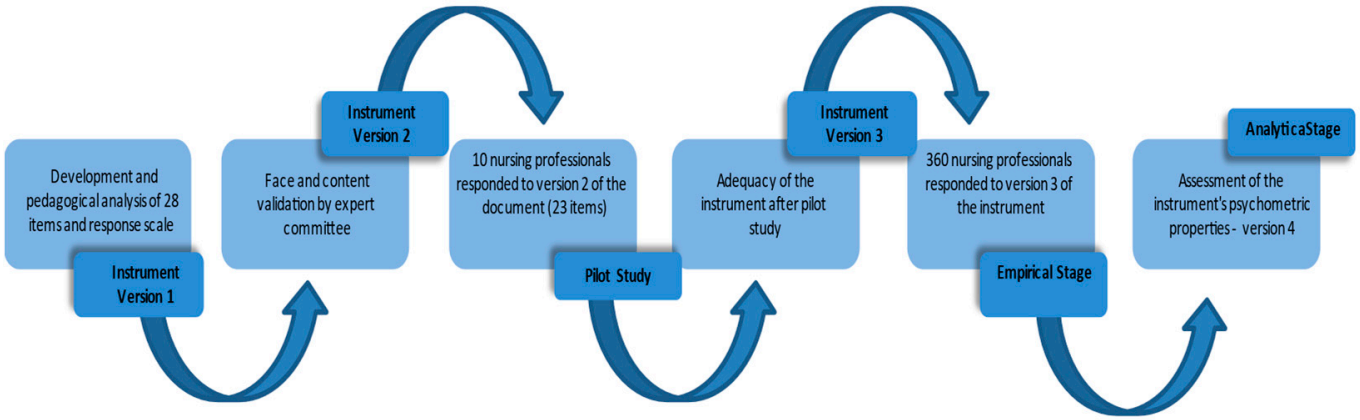

Figure 1. Methodological flowchart of the process of development and validation of an instrument for measuring the self-efficacy of health professionals for the practice of hand hygiene and the use of gloves (SEHP-HHG).

This study had a judges committee (face and content validation) and nursing professionals (pre-test and evaluation of the instrument's validity and reliability).

The composition of the judges committee met the following eligibility criteria: health professionals who work or have at least six months of experience in the area of hospital infection control; professionals and/or researchers with proven experience (publications in journals, supervision of doctoral theses and master's dissertations) and knowledge of Bandura based on SCT.

The evaluation of the metric properties of the SEHP-HHG instrument involved nursing professionals working in the institution this study, who had been carrying out direct patient care activities for at least six months. Nursing professionals who were away from their activities for any reason (training leave, absence for health reasons, vacations, and days off) were excluded. It was determined that individuals who participated in the pre-test or pilot study stage would not participate in the subsequent stages (psychometric validation and test-retest).

2.1. Participants

In the face and content validation stage, 15 health and education professionals were invited by electronic means (email) to form the judges committee. The judges were responsible for evaluating the wording and relevance of the statement, the response scale, and the items of the SEHP-HHG instrument (28 items in version 1). After the evaluations made by the judges, version 2 of the SEHP-HHG instrument was generated for the pilot test (pre-test) with 23 items.

The pre-test or pilot study stage took place electronically (via online form) and allowed checking the comprehension and difficulty level of the items, as well as estimating the time to complete the instruments. After receiving the judges' opinions, the researchers gathered the information and compiled the suggested changes. Modifications to the instrument were accepted with a consensus among the judges above 80%.

Recruitment of participants in the validation of version 3 of the EHP-HHG instrument was based on the electronic scale system, in all work shifts. After the first round and respecting an interval of 15 days, the second round was held. Thus, 27 nursing professionals answered version 3 of the EHP-HHG instrument again. This stage, called test-retest or reproducibility, aimed to assess intraobserver reliability.

The official data collection was divided into three phases: sociodemographic characterization of the participants (professional training, training and updating of knowledge, among other variables); application of the instruments (EHP-HHG and the perceived general self-efficacy scale—PGSS), which was necessary for the evaluation of external criteria, and it was based on the hypothesis that the greater the perceived general self-efficacy, the greater the self-efficacy of health professionals for practicing hand hygiene and using gloves.

2.2. Instrument

The EHP-HHG instrument is self-applied, consisting of 19 items (version 4 or the final version) with a continuous response scale ranging from 0 to 100 points. The final mean score ranges from 0 to 100 points, with a higher score corresponding to greater self-efficacy.

The methods included were the assessment of the instrument's dimensionality, convergent validation (high correlation between measures of instruments that assess related constructs) and the instrument's ability to recognize differences between distinct groups (validation by known groups).

To calculate the sample size, we adopted the classical rest theory (TCT) based on the assumptions of Pasquali [29], which states that in a sample smaller than 200 subjects, the results may be precarious in the factor analysis.

2.3. Data Processing and Analysis

After encoding the variables in a dictionary or mask, the information was fed into an electronic spreadsheet, using the double-entry validation method (typing). Subsequently, the data were imported into the IBM® SPSS® software (Statistical Package for Social Sci-

ence) version 20.0, for statistical analysis. The dimensionality assessment was verified by confirmatory factor analysis, using version 26 of the IBM® SPSS® Amos™ (Analysis of Moment Structures) software, Version 19.0. Armonk, NY: IBM Corp.

In construct validation by known groups, Student's *t*-test for independent samples (numerical) and Chi-square (categorical) were used. To assess the convergent construct validation, the Pearson correlation test was used between the scores of the EHP-HHG instrument with the scores of the PGSS.

The reliability assessment of the EHP-HHG instrument was performed by the internal consistency of the items measured by Cronbach's alpha coefficient. Values above 0.7 were considered adequate to indicate the reliability of the EHP-HHG instrument [30]. Test-retest reliability, or reproducibility was performed using the intraclass correlation coefficient (ICC) between the scores of subsequent assessments. For this, we adopted the ICC value greater than 0.60. To discriminate differences between groups, it is recommended that the coefficient value be above 0.70, although some authors suggest that values of 0.60 are acceptable [30]. To assess the magnitude of the correlations, we adopted the classification criteria stipulated by Cohen [31], in which the correlations are considered weak (if $0 < r < 0.3$), moderate (if $0.3 \leq r < 0.5$) or strong ($r \geq 0.5$). For all statistical analyzes we adopted the significance level of $p \leq 0.05$.

Data collection was carried out in a clinical hospital, after approval by the Human Research Ethics Committee.

3. Results

The initial version of the EHP-HHG instrument containing 28 items was submitted to face, and content validation by 15 experts who made up the judges committee, being 11 nurses, two biomedical doctors, one pharmacist, and one physician. In this sense, the initial version was modified in the wording of the statement and in the items, as well as to the exclusion of five items. After incorporating the suggestions and changes, it resulted in version 2.

In the psychometric validation, 362 nursing professionals participated. The majority (80.9%) of the participants were female and the predominant age group was from 30 to 59 years (88.1%), with a mean age of 41.6 years (SD = 9.28; median = 40.04; minimum = 18.00; maximum = 70.00). Regarding professional characterization, 151 (41.7%) participants had specialization, 203 (56.1%) worked as a nursing technician. The length of experience in the position was concentrated between 10 and 19 years (48.3%), with an average of 14 years (SD = 8.53), while the length of experience in the health area was also concentrated in the same range (52.5%), with an average of 16 years (SD = 8.42). In the distribution of participants according to the units of activity, 91 (25.1%) were from the Intensive Care Units—ICU (neonatal ICU, pediatric ICU, surgical ICU, neurological ICU, general ICU and coronary ICU), followed by 53 (14.6%) from the emergency unit and 48 (13.3%) from the ambulatory. The other participants were distributed in the other units.

3.1. Metric Evaluation Self-Efficacy of Health Professionals for Practicing Hand Hygiene and Using Gloves (SEHP-HHG)

The items metric evaluation of the SEHP-HHG instrument was performed through the distribution of the participants' responses, considering values from 0 to 100 points. The maximum and minimum variation of the mean was 97.7 points and 21.6 points, respectively. The mean self-efficacy score was 87.0 points in version 4 (the final version).

In the validation of dimensionality (dimensional construct), the evaluated model was built in a one-dimensional structure containing only one latent variable: self-efficacy.

Table 1 presents the factor structure of the proposed final version (with 19 items) of the SEHP-HHG instrument, which was performed using the IBM® SPSS® Amos™ 26 application and indicates the regression coefficient and factor loadings. The factor presented factor loadings between 0.12 and 0.76. Some items had factor loadings less than 0.3: items 11, 12, 14, 15, 21 and 23. All items were statistically significant.

Table 1. Confirmatory factor analysis of the instrument Self-efficacy of health professionals for hand hygiene and use of gloves (SEHP-HHG), indicating the regression coefficient and factor loadings. Uberlândia, MG, Brazil, 2019.

		Non-Standardized Regression Coefficient	Factor Loadings	Standard Error	Critical Reason	*p*
Item 01	Self-efficacy	1.00	0.64	-	-	-
Item 02	Self-efficacy	0.50	0.45	0.06	8.61	<0.001
Item 03	Self-efficacy	0.77	0.44	0.10	7.37	<0.001
Item 04	Self-efficacy	0.67	0.59	0.07	9.44	<0.001
Item 05	Self-efficacy	0.97	0.71	0.09	10.84	<0.001
Item 06	Self-efficacy	0.86	0.76	0.07	11.50	<0.001
Item 07	Self-efficacy	0.88	0.73	0.08	11.12	<0.001
Item 08	Self-efficacy	0.23	0.30	0.04	5.15	<0.001
Item 09	Self-efficacy	0.61	0.56	0.07	9.07	<0.001
Item 11	Self-efficacy	0.60	0.16	0.21	2.82	0.005
Item 12	Self-efficacy	0.46	0.19	0.14	3.36	<0.001
Item 13	Self-efficacy	0.59	0.44	0.08	7.34	<0.001
Item 14	Self-efficacy	0.54	0.25	0.12	4.40	<0.001
Item 15	Self-efficacy	0.42	0.16	0.15	2.73	0.006
Item 17	Self-efficacy	0.91	0.49	0.11	8.15	<0.001
Item 19	Self-efficacy	0.69	0.36	0.11	6.15	<0.001
Item 20	Self-efficacy	0.94	0.54	0.11	8.86	<0.001
Item 21	Self-efficacy	0.48	0.18	0.15	3.20	0.001
Item 23	Self-efficacy	0.25	0.12	0.12	2.07	0.038

The model revealed an adequate amount of adjustment after the exclusion of four items, resulting in version 4 (the final version) of the SEHP-HHG instrument (Box 1). The following model fit indices were obtained: chi-square χ^2 (138) = 299.995 ($p < 0.001$), RMSEA = 0.057, GFI = 0.917, TLI = 0.881 and CFI = 0.904. The value of the chi-square ratio in relation to the degrees of freedom presented an adequate adjustment (χ^2/g.l. = 2.17).

The factorial structure of version 4 (the final version) of the SEHP-HHG instrument presented factor loadings between 0.12 and 0.76. All items were statistically significant ($p < 0.05$)—Table 2.

3.2. Validity Studies

Construct validity by known groups was assessed by comparing the SEHP-HHG instrument with the variables: gender, activity professional category, activity unit and participation in training (Table 3). Significant differences were identified in the variables gender and activity unit with version 4 (the final version) of the SEHP-HHG instrument ($p = 0.001$; $p = 0.003$), respectively.

From 362 nursing professionals who participated in this study, 250 professionals answered the perceived general self-efficacy scale (PGSS) instrument with an average score of 3.37 points.

There was a weak correlation between the scores of the EHP-HHG instrument items and the PGSS items (r = 0.228, $p < 0.001$).

There was no statistically significant correlation between age (r = 0.010), education level (r = 0.082), time in the position (r = −0.003) and time in the health area (r = −0.025) with the scores of the AEPS-HML instrument. However, there is an inverse correlation between the variables time in the position and time in the health area.

3.3. Reliability Studies

In the analysis of internal consistency, the reliability of the EHP-HHG instrument was assessed using Cronbach's alpha coefficient. Thus, according to the results obtained, adequate consistency was found because version 4 (the final version) presented $\alpha = 0.77$.

Box 1. Final version of the instrument Self-efficacy of health professionals for hand hygiene and use of gloves (SEHP-HHG). Uberlândia, MG, Brazil, 2019.

1. How confident are you that you play an important role in the control of healthcare-associated infections (HAI)?
2. How confident are you that hand hygiene and the use of gloves should be regular and frequent behaviors in your professional routine?
3. How confident are you that your motivation influences adherence to hand hygiene and glove use?
4. How much do you know about hand hygiene and glove use recommendations?
5. How confident are you that you comply with the hand hygiene and glove recommendations?
6. How confident are you that your professional performance makes you happy because you are protecting patients and yourself against the risk of infections?
7. How confident are you that you meet the expectations of the patients in your care regarding hand hygiene?
8. Are you confident that gloved and ungloved hands can carry contamination from one place to another?
9. How confident are you that you can apply your knowledge of hand hygiene and glove use in your clinical practice?
10. How confident are you in deciding between hand hygiene and/or wearing gloves?
11. How confident are you that the accident with biological material is a factor that modifies your behavior regarding the use of gloves?
12. How confident are you that in-service education changes your behavior regarding hand hygiene and glove use?
13. How confident are you that your conduct, in relation to hand hygiene and use of gloves, influences the behavior of your co-workers?
14. How confident are you that your supervisor's conduct, in relation to hand hygiene and the use of gloves, influences your behavior?
15. How confident are you that you comply with the recommendations for hand hygiene and use of gloves in emergency situations?
16. How confident are you that, when you want, you can find a way to adhere to hand hygiene and glove recommendations?
17. How confident are you that you follow hand hygiene recommendations, even when your hands are dry, painful, and/or sore or cracked?
18. How confident are you that the time taken to sanitize your hands is not a disincentive to your adherence?
19. How confident are you that the proper structure (sink, paper towel, soap, alcohol) influences your adherence to hand hygiene?

Table 2. Factorial structure indicating covariances and correlations of the instrument Self-efficacy of health professionals for hand hygiene and use of gloves (SEHP-HHG). Uberlândia, MG, Brazil, 2019.

			Covariance	Correlation	Standard Error	Critical Reason	*p*
e14	<–>	e15	239.92	0.42	31.24	7.68	<0.001
e12	<–>	e13	84.68	0.29	15.63	5.42	<0.001
e1	<–>	e2	36.29	0.29	7.35	4.94	<0.001
e5	<–>	e7	25.25	0.30	6.07	4.16	<0.001
e13	<–>	e17	39.42	0.19	10.74	3.67	<0.001
e19	<–>	e20	47.88	0.18	15.02	3.19	0.001
e13	<–>	e14	41.90	0.16	11.49	3.65	<0.001
e8	<–>	e9	12.03	0.17	3.85	3.12	0.002
e11	<–>	e12	161.43	0.18	45.95	3.51	<0.001
e15	<–>	e23	93.28	0.16	27.83	3.35	<0.001
e3	<–>	e14	64.18	0.19	15.99	4.01	<0.001
e2	<–>	e8	13.99	0.18	3.88	3.60	<0.001
e2	<–>	e3	24.49	0.15	8.22	2.98	0.003
e20	<–>	e21	61.29	0.16	20.99	2.92	0.004

Table 3. Comparison of the mean scores of the Self-Efficacy of Health Professionals for Hand Hygiene and Glove Use (SEHP-HHG) instrument, according to sex, professional category, unit of practice and participation in training courses. Uberlândia, MG, Brazil, 2019.

Groups	n	%	$\bar{x}$	s	p *
Sex					
Female	293	80.9	87.70	8.31	0.001
Male	69	19.1	84.02	9.42	
Professional category of performance					
Nurse	92	25.4	87.39	7.86	0.618
Nursing technician/Nursing assistant	270	74.6	86.87	8.90	
Unit of action					
Hospitalization + Outpatient	218	60.2	88.17	7.55	0.003
ICU + Emergency	144	39.8	85.24	9.83	
Participation in training					
Yes	323	89.2	87.12	8.75	0.447
No	39	10.8	86.00	7.67	

* The significance level was defined at $p \leq 0.05$.

The test-retest reliability of the instrument was evaluated in two moments, with an interval of 15 days. Twenty-seven nursing professionals, who participated in the test stage, answered version 3 of the EHP-HHG again. The ICC was calculated considering the mean of the scores of the dimensions and the instrument obtained in the test and retest. It can be stated that the reproducibility of version 4 of the EHP-HHG was adequate (ICC = 0.63).

4. Discussion

In this study, the construction and validation of the instrument for measuring self-efficacy for practicing hand hygiene and using gloves (SEHP-HHG) among nursing professionals in a Brazilian hospital institution was carried out, in order to provide a tool capable of measuring, monitoring, and intervening in problem situations of infection control at its various health care levels.

Initially, the importance of the theme must be considered, which proposes to provide a tool capable of simultaneously evaluating for practicing hand hygiene and using gloves. It is important to mention that the use of validated instruments to measure the self-efficacy of health professionals is only performed for practicing hand hygiene [15,16,32,33].

Several studies have revealed the absence of robust results that confirm the low or high proper adherence for practicing hand hygiene and using gloves, because they have been frequently based on self-reports by health professionals [13,15,16,32].

The evaluation phase of the SEHP-HHG metric properties had the participation of 362 nursing professionals. It is worth noting this sample exceeded the established minimum sample size.

Adequate internal consistency of the items was found, since version 4 (the final version) presented $\alpha = 0.77$. Values above 0.7 were considered adequate to indicate the reliability of the instrument [30].

Regarding dimensionality, the model presented adequate adjustment to the dimensional structure after the exclusion of four items. Thus, the root-mean-square error of approximation (RMSEA = 0.057) was considered as indicative (between 0.05 and 0.08) of a model fit to proposed factorial structure.

It was found that some items had factor loadings less than 0.3. Beavers et al. [34] consider that items are correlated with their factors when they have a factor loading greater than 0.3. However, despite indicating a valuable statistical contribution, the conceptual criterion is the most relevant. Thus, it was decided in this research not to exclude the items.

Furthermore, it was identified that the adjustment model was adequate after the exclusion of four items (items 10, 16, 18 and 22). In the absolute fit measures, the chi-square

value was $\chi^2(138) = 299.995$ ($p \leq 0.001$). Although, based on the chi-square value, one has to reject the hypothesis of equality of the variance-covariance matrices (predicted by the model and obtained from the data), the RMSEA value (0.057) is within the limits considered as indicative of a model fit to the proposed factor structure as being adequate. The goodness of fit index (GFI = 0.917) was satisfactory to what is recommended (0.900).

For incremental fit measures, the scientific literature recommends a cutoff above 0.90 for a good fit. The Tucker-Lewis index value (TLI = 0.881) was lower than the cutoff, while the comparative fit index (CFI = 0.904) was adequate.

The intraclass correlation coefficient (ICC) values were 0.63 for version 4 (the final version). It is recommended that ICC values are above 0.70, although some authors suggest that values of 0.60 or even 0.50 are acceptable [30]. Based on this, we consider that the test-retest reproducibility confirmed the instrument's temporal stability, and the internal consistency was adequate.

Construct validity by known groups was confirmed by comparing the means of the items of the SEHP-HHG instrument with the variables gender and unit of activity. Females showed greater self-efficacy compared to males. The results of this study are in line with other studies [35,36], in which women had significantly better practices and positive beliefs regarding hand hygiene than men.

In the convergent construct validation between the scores of the items of the SEHP-HHG instrument and the items of the perceived general self-efficacy scale (PGSS), a weak correlation was observed.

In view of the variables analyzed in the convergent construct validity, the presence of a statistically significant correlation between demographic (age) and occupational (level of education, time in the position and time in the health area) with the scores of the SEHP-HHG instrument. However, there is an inverse correlation between the variable time in the position and time in the health area with the scores of the SEHP-HHG.

Although there are limitations, it is possible to see the contribution of this study to research and practice with the availability of the EHP-HHG instrument, which will allow the assessment of behaviors, attitudes, and co-responsibilities of health professionals in the control of infections in other care contexts. In addition, it will enable future studies to expand the heterogeneity of evaluated professionals. Finally, although hand hygiene is a simple attitude, the challenge in improving adherence rates lies in the complexity involved in making this procedure a routine. In this context, it is not enough to use specific multimodal strategies to increase this adherence. Strategies should be part of the routine of health professionals, with constant monitoring and evaluation [37,38].

5. Conclusions

The EHP-HHG instrument was developed, and it is valid and reliable for measuring hand hygiene and using gloves in Brazilian nursing professionals in the hospital context. Moreover, the EHP-HHG instrument is easy to apply and can be used in the assessment of behavioral determinants, regarding hand hygiene and the use of gloves, in other health professionals, considering the generalization and scope of the items. The study pointed out that nursing professionals are aware that hands, with or without gloves, can carry contamination from one place to another, which reinforces the need to implement effective interventions to reduce the risk of cross-contamination.

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