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Original Article

Management of cuff pressure in adult users with an artificial airway by healthcare professionals in Chile

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ABSTRACT

There are different international recommendations on cuff pressure range for the management of adult patients with an artificial airway. Some Chilean medical centres have developed their own airway management protocols based on these recommendations, due to the lack of a national guide. A literature review was undertaken at the University of Southampton, U.K., to determine the appropriate cuff pressure range. Results found that this is between 20-30 cmH_2O. Afterwards, a valid and reliable online questionnaire was developed in Spanish at the University of Southampton for application in Chile. This study aims to analyse the cuff pressure management of adult patients with an artificial airway performed by non-medical healthcare professionals in Chile. An analytical, observational, and cross-sectional study was carried out. A database with the responses of Nurses, Physiotherapists, and Speech Therapists with experience working with adult patients with an artificial airway in Chile was analysed. Results show that 58% of the participants used exclusively the objective technique, whilst 7% only used subjective techniques. The minimum and maximum pressures used were 25 and 34 cmH_2O respectively, which were higher than the recommended range. 38% of the participants declared that there was an existing protocol at their workplace. There was a significant difference between the maximum pressures used by the clinicians and the pressures recommended on the protocols ($p = .029$). In conclusion, the participants showed poor management of cuff pressure, which could create risks linked with over-inflated or under-inflated cuffs. It is suggested to develop a national guide.

Palabras clave:
Airway management; Tracheostomy; Intubation; Surveys and questionnaires; Chile

Manejo de la presión del *cuff* en usuarios adultos con vía aérea artificial por profesionales de salud en Chile

RESUMEN

Existen diferentes recomendaciones internacionales sobre el rango de presión del *cuff* para utilizar en usuarios adultos con vía aérea artificial. Algunas instituciones de salud chilenas han creado sus protocolos de vía aérea basadas en dichas recomendaciones, ya que no existe una guía nacional. Se desarrolló una revisión bibliográfica en la Universidad de Southampton, Reino Unido, para determinar el rango adecuado de presión del *cuff* siendo entre 20-30 cmH_2O. Posteriormente, se creó un cuestionario online válido y confiable en español en la Universidad de Southampton, Reino Unido, para ser aplicado en Chile. El objetivo de este estudio es analizar las respuestas emanadas de los profesionales de salud en Chile sobre el manejo de la presión del *cuff* en pacientes adultos con vía aérea artificial. Es un estudio analítico, observacional y transversal. Consistió en analizar las respuestas de enfermeros, kinesiólogos y fonoaudiólogos con experiencia en pacientes con vía aérea artificial tras aplicar el cuestionario. Los resultados muestran que la técnica objetiva fue ampliamente utilizada de forma aislada (58%) en comparación al uso exclusivo de subjetivas (7%). La presión mínima fue de 25 cmH_2O mientras que la máxima fue de 34 cmH_2O, rango mayor a lo reportado por la evidencia. Solo un 38% declaró la existencia de protocolo en su trabajo. Hubo diferencia estadísticamente significativa entre las presiones máximas usadas y las recomendadas en dichos protocolos ($p=0,029$). Se concluye que los participantes en Chile mostraron un manejo poco seguro de la presión del *cuff* en pacientes adultos con vía aérea artificial que puede generar riesgos asociados a *cuffs* sobre o sub insuflados. Se sugiere desarrollar una guía Ministerial.

Keywords:
Manejo de vía aérea; Traqueostomía; Intubación endotraqueal; Cuestionario; Chile

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INTRODUCTION

The management of patients with an artificial airway (AA) in Chile is carried out by teams that include healthcare professionals such as doctors, nurses, physiotherapists, and speech therapists. Keeping the cuff in endotracheal tubes (ETT) and certain tracheostomy tubes (TQT) within adequate pressure levels ensures correct sealing of the airway during mechanical ventilation, and reduces the risk of aspiration (Calder & Pearce, 2010; Dorsch & Dorsch, 2008). This is done using both objective and subjective techniques. Objective techniques measure pressure in centimeters of water (cmH_2O) or millimeters of mercury (mmHg). It is important to mention that 1 mmHg is equivalent to 1.36 cmH_2O (Wilmott et al., 2012).

Subjective techniques do not measure cuff pressures. Categories of these techniques include minimal occlusive volume, minimal leak, predetermined volume, and digital palpation (Félix-Ruiz et al., 2014). Several studies comparing the precision of subjective techniques to maintain cuff pressure in an adequate range have shown that they are not entirely effective (Félix-Ruiz et al., 2014; Giusti et al., 2016; Muñoz et al., 2011; Stewart et al., 2003). When pressure management is not correct, it increases the risk of tracheal damage associated with overinflated cuffs and the possibility of developing aspiration pneumonia related to underinflated cuffs.

International recommendations for the air cuff pressure range differ, with the minimum recommended being between 15 and 25 cmH_2O while the maximum is between 25 and 35 cmH_2O (Bodenham et al., 2014; Das & Kumar, 2015; De Leyn et al., 2007; Hess, 2005; Russell & Matta, 2004; Sole et al., 2011). In Chile, there is no official document for the management of users with an AA. This has resulted in some healthcare institutions creating their own protocols, which differ in their recommendations for safe cuff pressure ranges (Clínica Alemana Temuco, 2017; Hospital de Castro, 2012; Hospital de Iquique, 2015; Hospital de la Florida, 2014; Hospital de Talca, 2016; Hospital Santiago Oriente, 2018). For its part, the *Hospital de Peñaflor* (2016) has a protocol that indicates the use of a manometer to inflate air cuffs (objective technique). However, it does not provide information on a recommended pressure range but rather proposes the subjective minimum leak technique. On the other hand, *Hospital de Talca* (2016) recommends in its protocol an objective or subjective technique using a predetermined volume, injecting 10 cc of air into the cuff. The foregoing highlights the fact that healthcare professionals in Chile use different criteria when it comes to cuff pressures, which could generate risks for users. Consequently, it is necessary to establish less variable criteria for the reality of practice in Chile.

It is important to mention that this work is the third part of a research line started at the University of Southampton, United Kingdom, where stage 1 and stage 2 were developed. In stage 1 a literature review was carried out, to determine the safe cuff insufflation range for TQT and ETT tubes (Rosales, 2019a). The conclusion was that to avoid the risk of aspiration pneumonia and tracheal damage, the safe range is between 20 and 30 cmH_2O, this being equal to what is recommended by current evidence (Jadot et al., 2018; Maldonado et al., 2018; Vera et al., 2020). In stage 2, a valid and reliable online questionnaire was created on the management of air cuff pressure by healthcare professionals in Chile, in users with an AA. This questionnaire contained categorical and continuous variables divided into four sections (use of objective techniques, use of subjective techniques, mixture of techniques, and participant information) with a total of 21 questions (Rosales, 2019b).

The present investigation, corresponding to stage 3, consists of the application of the questionnaire for a first approach to the criteria used in Chile to maintain the cuffs in ETTs and TQTs of adult patients within adequate ranges. Based on this, the research question is What are the cuff techniques and pressure levels used by non-medical healthcare professionals in Chile? The objective of this study is to analyse the responses of healthcare professionals in Chile on the management of cuff pressure in adult patients with an AA.

MATERIALS AND METHOD

Design

This is an analytical, observational, and cross-sectional study.

Population and sample

The population corresponds to nurses, physiotherapists, and speech therapists practicing in Chile and who have experience in the management of adult patients with an AA. The sample was obtained by the convenience sampling method. It was made up of 71 professionals (nurses, physiotherapists, and speech therapists in Chile, with experience in the management of adult users with an AA), who participated voluntarily. Participant authorisation was obtained through informed consent, from which a list was made of the professionals who agreed to answer the questionnaire. This questionnaire was anonymised, in order to protect reliability. This list was necessary to elaborate given that in Chile there is no

official registry of all the healthcare professionals working in the public and private sectors. Moreover, information was required about professionals with experience in managing users with an AA.

Inclusion and exclusion criteria

As inclusion criteria, the professionals were required to be nurses, physiotherapists, and speech therapists with experience in the management of users with an AA. Other healthcare professions were excluded. Nurses, physiotherapists, and speech therapists without experience in this area, or with a lack of specific professional practice greater than two years (in September 2018) were also excluded.

Instruments

The questionnaire on cuff pressure management by healthcare professionals in adult users with an AA in Chile was used (Rosales, 2019b), which has a validity of 0.93, 72.73% of the items with excellent reliability, and 27.27 % with good reliability. This questionnaire is made up of 21 categorical dichotomous and non-dichotomous questions, as well as continuous questions. It is divided into four sections: 7 questions about the use of objective techniques, 6 questions about subjective techniques, 3 questions about mixed techniques, and 5 questions requiring general information about the participants. The responses were organized in an anonymised database in Microsoft Excel 2016, in January 2019. Finally, the Statistical Package for the Social Sciences (SPSS) v.24 was used for data analysis.

Procedures

Review and approval was requested from the Scientific Ethics Committee of the *San Juan de Dios* Hospital to analyse an anonymised database previously authorized by informed consent, which contained responses to a valid and reliable online questionnaire (Rosales, 2019b). This was applied over a period of 90 days, between September 29 and December 28, 2018. Then, the data was analysed using descriptive and analytical statistics, with the SPSS statistical software.

Data analysis

First, the data was analysed using descriptive statistics. With regards to dichotomous and non-dichotomous categorical data, the descriptive analysis was done using the frequency of each category, along with its respective percentage. Continuous data was analysed creating box diagrams to observe the presence or absence of atypical values (outliers). The variables that presented outliers were analysed to determine whether they were correct or erroneous, the latter being excluded from the analysis. Subsequently, symmetry was calculated; the distribution was considered symmetric when it was in the range between +1.96 and -1.96, while the distribution outside of that range was considered asymmetric (Álvarez, 2007). For symmetric distributions both the mean and the standard deviation were considered whilst for asymmetric distributions the median and the interquartile range (Álvarez, 2007; Dancey et al., 2012). In addition, the range of the continuous variables' data was described, together with their minimum and maximum values. Regarding the questions, there was a categorical question about the unit of measurement used in the protocol of the participants' workplace. Subsequently, it was requested to mention the minimum and maximum pressure levels recommended in the workplace. Values in mmHg were converted to cmH_2O, multiplying the values by 1.36 (Wilmott et al., 2012). The analysis of the difference between the minimum and maximum cuff insufflation pressures used by the participants and the ones recommended by protocols was carried out by applying paired difference tests, for variables with repeated groups: Repeated t-test for parametric and Wilcoxon for non-parametric variables, with a 95% confidence interval and a p-value = .05 (Álvarez, 2007; Dancey et al., 2012).

Ethical considerations

This study involved the application of an informed consent form where the research subjects authorized their participation. In this document, the importance of the study, use of the data, confidentiality of the participation, mechanisms of anonymisation, the relevance of the participation, and contact details of the researcher were made explicit. This study was approved by the Scientific Ethics Committee of the *San Juan de Dios* Hospital in Santiago through code 059.

Confidentiality and anonymisation

No information was requested to identify the participants who answered the questionnaire; therefore, their participation was completely anonymous. The data was recorded in a database in Excel format which was saved with an access code on the researcher's personal computer.

RESULTS

Participants

The database contained the responses of 71 professionals who answered the full questionnaire. The participants were mainly physiotherapists and speech therapists. Approximately half of the

sample declared having between 2 and 5 years of experience in the management of users with an AA. The highest training level related to this area was through courses and/or workshops. More than 40% of the participants declared that the last healthcare institutions where they worked treating users with an AA were highly complex public hospitals. Finally, around 83% declared as currently be working with users with an AA. Table 1 describes the characteristics of the participants.

Table 1. Characteristics of the participants.

Profession	Frequency	%
Nursing	10	14,1
Physiotherapy	30	42,3
Speech Therapy	31	43,7
	n=71	100
Experience in the management of users with an AA		
Less than two years	26	36,6
Between 2 and 5 years	32	45,1
Between 5 and 9 years	11	15,5
More than 10 years	2	2,8
	n=71	100
Highest training level in the management of users with an AA		
Conferences	3	4,2
Courses – Workshops	30	42,3
Diploma	27	38
Masters	5	7
Does not apply	6	8,5
	n=71	100
Last institution where the professional worked with users with an AA		
Primary Care		
Urgency Service *SAPU*	1	1,4
Health Centre *CESFAM, CECOF, COSAM, CSU, CSR*	1	1,4
Tertiary Care		
High complexity public hospital	29	40,8
Medium complexity public hospital	11	15,5
Low complexity public hospital	4	5,6
Clinic or private hospital	10	14,1
Private Rehabilitation Centre, with or without hospitalisation	7	9,9
Private Medical Centre	1	1,4
Homecare	6	8,5
Other	1	1,4
	n=71	100
Currently working with users with an AA		
Yes	59	83,1
No	12	16,9
	n=71	100

Use of objective techniques

92.6% of the participants stated that they used a cuff manometer to measure the pressure range of the cuff. Concerning the minimum and maximum pressure values in cmH_2O, the data reported by one participant were found to be atypical, hence they were eliminated. The median and interquartile range were used for the descriptive analysis since the asymmetry of the values of the maximum pressure of the cuff used was 5.66. In turn, the median obtained was 25 for the minimum pressure and 33.5 cmH_2O for the maximum pressure, and the interquartile range was 10 and 5 cmH_2O, respectively.

Regarding how the participants learned about the pressure range for the cuff, the majority did so through courses and seminars, followed by postgraduate studies, while the minority through

books and international protocols. With respect to internal protocols for the management of users with an AA (used in their workplace), more than 50% of the participants declared that there was no such document. Of those who mentioned that their institution has a protocol, over 90% reported that the unit of measurement was in cmH_2O. Table 2 describes the information in detail.

Table 2. Description of the acquisition of knowledge by the participants about the range of pressures for the cuff, the existence of an institutional protocol, and the measurement unit in said protocol.

Source of knowledge about cuff pressure range	Frequency	%
Book(s)	1	1,4
Article(s)	4	5,6
International Clinical Guideline(s)	2	2,8
International Protocol(s)	1	1,4
National protocol(s) external to the workplace	0	0
Workplace protocol	10	14
Undergraduate programme	5	7
Professional Internship	5	7
Postgraduate programme	13	18
Course(s)-Seminar(s)	15	21
Peer education	9	13
Other	1	1,4
	n=66	100
Existence of an AA protocol in their last/current workplace		
Yes	27	38
No	40	56
Doesn't Know	4	5,6
	n=71	100
Measurement unit in the AA protocol of their last/current workplace		
cmH_2O	25	93
mmHg	1	3,7
I don't know	1	3,7
	n=27	100

It is important to highlight that of the twenty-seven participants who affirmed that a protocol existed in their institution, one declared that they did not know the unit of measurement used, while another two reported that they were unaware of the ranges. Therefore, to develop a descriptive analysis of the recommended pressure values, a box-plot was carried out considering the data reported by the other twenty-four participants. Outliers were found in two responses concerning the maximum pressures; however, these were considered for the analysis because they were similar. Both the median and the interquartile range were used since the maximum recommended pressure had a level of asymmetry of 4.16. Due to this, the median of the minimum recommended pressure was 25 cmH_2O, while the maximum was 35 cmH_2O. On the other hand, the interquartile range was 10 cmH_2O in both cases. Table 3 details the data obtained during the descriptive analysis of the minimum and maximum pressures used by professionals in their clinical practice. Along with this, the pressures in cmH_2O recommended by the institutional protocols were reported.

Table 3. Details of the minimum and maximum pressures used by the participants, and the minimum and maximum pressures recommended in the institutional protocols, both in cmH2O.

	Participants		Protocols	
	Minimum Pressure	Maximum Pressure	Minimum Pressure	Maximum Pressure
Valid Data	64	64	24	24
Median	25	33,5	25	35
Skewness	-0,448	1,692	0,605	1,963
Std. Error of Skewness	0,299	0,299	0,472	0,472
Range	25	50	15	40
Minimum Value	10	20	20	30
Maximum Value	35	70	35	70
25th Percentile	20	30	20	30
50th Percentile	25	33,50	25	35
75th Percentile	30	35	30	40
Interquartile Range	10	5	10	10

Subsequently, and due to the existence of non-parametric data, the difference between the pressure levels used by the twenty-four participants and those reported as recommended in protocols was statistically analysed, using the Wilcoxon statistical test. In relation to the minimum pressure used by the professionals and the minimum recommended in the protocols, the results showed that there were no statistically significant differences between them ($z = -1.603$, $p = .109$). However, the results showed that there was a statistically significant difference between the maximum pressure used by clinicians when compared to those recommended by the institutional protocols at their workplace ($z = -2.188$, $p = .029$).

Use of subjective techniques

About 50% of the participants reported using these techniques and about 45% reported that they did not use them. Participants who declared using subjective techniques also answered specific questions about minimal occlusive volume, minimal leak, digital palpation, and predetermined volume. Table 4 summarise the responses of the participants about the use of subjective techniques.

Table 4. Data of participants who declared the use of subjective techniques.

	Yes		No		Doesn't know it	
Item	Freq.	%	Freq.	%	Freq.	%
General Use of subjective techniques (n=71)	35	49	33	47	3	4,2
Use of the subjective technique of minimal occlusive volume (n=35)	23	66	6	17	6	17
Use of the subjective technique of minimal leak (n=35)	8	23	17	49	10	29
Use of the subjective technique of digital palpation (n=35)	27	77	7	20	1	2,9
Use of the subjective technique of predetermined volume (n=35)	17	49	17	49	1	2,9

Of the participants who reported using the predetermined volume technique in cc or ml of air, only 12 reported valid values. These values were analysed using a box-plot, where no outliers were found. The asymmetry of the values of this technique was 0.75. Therefore, mean and standard deviation were used, which were 7.00 cc and 3.766 cc, respectively. This information is detailed in Table 5.

Table 5. Value in cc or ml used in the subjective technique of predetermined volume.

Predetermined volume technique	Value in cc or ml
Valid Data	12
Average	7
Standard Deviation	3,766
Variance	14,182
Skewness	0,478
Std. Error of Skewness	0,637
Range	14
Minimum Value	1
Maximum Value	15

Use of objective and subjective techniques

Around 63% of the participants stated that they did not mix techniques. Of these, over 90% mentioned that the main technique used was objective, while about 7% responded they used

exclusively a subjective technique. 37% of the professionals reported using techniques simultaneously, where more than 92% used both objective and subjective techniques. The rest of the participants reported that they only use subjective techniques. Table 6 shows the details of the use of objective and subjective techniques.

Table 6. Details of the use of objective and subjective techniques.

Use of simultaneous techniques during user care	Frequency	%
Yes	26	37
No	45	63
	n=71	100
Among those who use simultaneous techniques during user care		
Use of objective technique together with subjective ones	24	92
Use of subjective techniques	2	7,7
	n=26	100
Among those who do not use simultaneous techniques during user care		
Objective technique is the main one used during in user care	41	91
Subjective technique is the main one used during in user care	3	6,7
Neither objective nor subjective technique	1	2,2
	n=45	100

DISCUSSION

One point of interest concerning the professionals who answered the questionnaire was their level of experience. 45% of them had between 2 and 5 years of experience, whilst the number of participants with over 10 years of experience was considerably lower. It would be interesting to know the age distribution to determine whether the high concentration of participants in that specific range of experience is related to age or the factor of interest.

Concerning training in this area, a high percentage was received via courses and workshops. Here, the question arises as to whether the information provided in this type of instance is aligned with current evidence-based recommendations, as it is traditionally presented at conferences and other events linked to universities. It is important to emphasize that a large percentage of volunteers worked in high complexity public hospitals: this allowed obtaining information from clinicians who cared for users with an AA throughout their hospitalisation period. In addition, a greater number of protocols for the management of users with an AA were found in tertiary healthcare institutions (Hospital de Castro, 2012; Hospital de Iquique, 2015; Hospital de la Florida, 2014; Hospital de Talca, 2016; Hospital Santiago Oriente, 2018).

With respect to the use of objective techniques and institutional protocols, a high percentage of the participants declared using a cuff manometer during care (close to 58%) which was considered optimal, as it is an objective method for measuring cuff insufflation pressures (Félix-Ruiz et al., 2014). However, the median for the minimum pressure was 25 cmH_2O (interquartile range of 10 and minimum-maximum values of 10-35) while that of maximum pressure was 33.5 cmH_2O (interquartile range of 5 and minimum-maximum values of 20 -70). This is worrisome for two reasons: first, the measures of central tendency for the minimum and maximum pressures are outside the range of 20 to 30 cmH_2O proposed by the most updated evidence (Jadot et al., 2018; Maldonado et al., 2018; Vera et al., 2020), and by the review of the literature carried out in the first stage of this study (Rosales, 2019a). It is noteworthy that national and international guidelines are based on literature and research that offer different recommendations, and are supported by primary articles with data obtained mainly from animal samples. Second, the ranges for both pressure extremes reflect that there is a high dispersion of cuff pressure values used by healthcare professionals, which might increase the risk of developing aspiration pneumonia or tracheal damage in patients.

Another noteworthy aspect about the use of objective techniques is that over 90% of the participants declared to use them exclusively or in combination with subjective techniques. Although this is important, because objective techniques avoid over or under-inflated cuffs (Félix-Ruiz et al., 2014; Muñoz et al., 2011; Stewart et al., 2003), the values used by the participants were outside the optimal pressure range for the cuff, as previously reported. Consequently, the use of objective techniques with inappropriate pressure values can put the health of users with an AA at risk.

Regarding institutional protocols, after the response of participants who reported having protocols at their workplace, it was established that the median for the minimum and maximum pressure levels was 25 and 35 cmH_2O, respectively. It is relevant to note that these values are also outside of what is proposed by current literature. Another relevant aspect is that a statistically significant difference was found between the maximum pressures used by professionals and the maximum pressures proposed by the literature.

This is why the question arises as to why healthcare professionals are not complying with what is established in institutional documents.

Concerning the use of subjective techniques, the literature indicates that these are not entirely effective. This is because pressures within optimal ranges are achieved only in 30% of the cases. In 70% of the cases, the pressures are very low or very high, exceeding 60 cmH_2O. On the other hand, there is no accordance between some subjective methods, when compared with pressure levels achieved by objective techniques (Félix-Ruiz et al., 2014; Muñoz et al., 2011; Stewart et al., 2003). Specifically, the results found in a study where subjective cuff techniques were evaluated (Félix-Ruiz et al., 2014) indicate that the minimum leak technique reached adequate pressure ranges in 33.3% of the study subjects, while digital palpation did so in 31%. A similar finding was observed in the work of Giusti et al. (2016), in which 32.4% of the participants correctly detected the pressure of the cuff. In the present investigation, approximately 47% of the participants mentioned not using subjective techniques, 7% used them exclusively, and around 34% combined objective and subjective techniques. The subjective techniques used by the participants of this research were sorted from highest to lowest percentage of use. The digital palpation technique was used by 77% of the respondents, which coincides with another work in which estimation techniques were used (Stewart et al., 2003). Digital palpation was also the one most used by clinicians in said work, reaching 88%. The second most used in this study was the minimal occlusive volume technique, with 67%. Finally, the minimum leak and predetermined volume techniques were used in 48.6% of the cases. Concerning the latter, 7 cc of air was the average volume injected by syringe, which is less than what is recommended by the protocol in *Hospital de Talca* (2016). No studies were found that establish an exact volume in cubic centimeters. It is important to mention that it is not logical to have a standard air injection volume, since aspects like anatomical differences in each user, the pathology for which it was decided to use an AA, and the number of ETT or TQT tubes must be considered, among other factors.

As for the limitations of this research, the following can be stated: first, the questionnaire used does not inquire about the participants' age, since during the validation process the group of experts considered it irrelevant for analysing results. This makes it impossible to carry out an analysis considering said variable, either a descriptive analysis to know the age distribution of the sample and/or an analytical one to relate age with experience in the area. Second, the questionnaire was applied exclusively through LinkedIn during 2018. Even though this is a professional platform, the real outreach is unknown, whether related to age or the use of technologies. Third, as a convenience sample was used, it is not possible to generalize the results to the practice of professionals in Chile. However, these serve as a first approach to ascertain the national reality when it comes to the management of patients with an AA. Fourth, this study focused exclusively on-air cuff pressure levels, hence other techniques and/or devices are not described. Finally, as it is a study in which a database from 2018 was considered, the institutional protocols that were included might have been updated since.

For future research, it is suggested to apply the questionnaire separately for each profession, to find out whether there are differences between specialties. In addition, the revision and update of all institutional protocols on the management of users with an AA, based on updated evidence, is recommended. Moreover, it is desirable that a single, evidence-based national guide be developed, to deliver recommendations for healthcare professionals on how to provide safe care to patients.

CONCLUSION

Participants showed unsafe handling of cuff pressure in adult patients with an AA, using different pressure ranges that differ from what is suggested in the updated literature and institutional workplace protocols. This increases the risk of developing aspiration pneumonia and/or tracheal damage due to the use of inadequate pressure levels, and therefore the costs associated with healthcare. It is necessary to have more in-depth training in this area based on quality evidence, considering that it is the participants themselves who declare that the most specialized source of training is through courses. It is suggested to follow the recommendations of the Chilean Society of Intensive Care Medicine [*Sociedad Chilena de Medicina Intensiva*], which delivers updated guidelines of the pressure ranges to use in the air cuff. Furthermore, it is suggested to develop a national ministerial guide that recommends a range of cuff insufflation pressure, based on updated studies that are carried out exclusively in the human population. The foregoing will help provide safe guidelines for healthcare professionals in Chile, for the care of adult patients with an AA.

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