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ORIGINAL ARTICLE

PREVENTION OF PNEUMONIA IN HOSPITALIZED ELDERLY PATIENTS

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ABSTRACT

Introduction: Increasing life expectancy and consequent population aging is a major challenge for the health sector. In this context, it is important to identify the vulnerabilities of the care process so as to readjust interventions and ensure excellence in the care provided to elderly patients. **Objective:** To evaluate the implementation of pneumonia prevention measures in hospitalized elderly. **Method:** Cross-sectional study. Data collection took place in a tertiary public hospital through the analysis of medical records and interviews with elderly patients or their caregivers. Data analysis was performed using the statistical program Epi Info.3.54. The study was approved by the Ethics Committee CAAE 394013144.0000.5231. Care measures for prevention of pneumonia were analyzed in 142 elderly patients. **Result:** It was found that care measures were prescribed most of the time, and the biggest difference was found in relation to checking and confirming that such measures were actually implemented. The measure of elevation of the head of the bed was checked by 92.9% of professionals and confirmed by 85% of the elderly. Regarding oral hygiene, a difference was also found in relation to checking, which was 98.5%, and confirming the performance 83.8%. **Conclusion:** There is a need to give priority and ensure the implementation of the prescribed actions and check them so as to promote the safe and effective development of the care plan, because the prescribed care measure was often checked, but its implementation was not confirmed in the same percentage by users; this brings up an important discussion about the quality of care provided to hospitalized elderly patients.

Keywords: Pneumonia. Aged. Disease prevention. Hospital care.

INTRODUCTION

Population aging is a major health challenge nowadays. This phenomenon started in developed countries, and more recently, it is in developing countries that the aging of the population has occurred most sharply. In Brazil, elderly people are those aged over 60 years, in 2010 the number of elderly was 20.5 million, with a proportion of approximately 39 elderly people for 100 young people. According to these data, it is estimated that in 2040 the elderly will make up 23.8% of the Brazilian population, ie a proportion of 153 elderly for every 100 young people[1].

This estimate is a result of improved quality of health care and basic sanitation. Longer life expectancy and lower fertility rates are factors responsible for the shift in the age pyramid, where there is a narrowing of the base that represents the young population and an expansion of the top that represents the elderly. This change has consequences for the health system, as the elderly are more vulnerable to the development of several pathologies, including pneumonia[2].

Physiological changes in the elderly end up making them more susceptible to the development of pneumonia, due to changes caused by the own senescence of the body. Old age is associated, for example, with lower efficiency of the immune system, decreased mucociliary transport which together with decreased reflex and efficacy of cough promotes a constant accumulation of secretions. This aspects make this group of people more susceptible to the development of respiratory infections[2,3].

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Nosocomial pneumonias (NP) are those that develop in the hospital environment and which are not present in the patient at the time of hospitalization. As a major cause of morbidity and mortality in hospitalized individuals and generator of high costs to the population because of the therapeutic demand and length of hospital stay, this disease has been recognized as an important public health problem worldwide[4,5].

In line with the increasing number of elderly people in health services and the higher risk of these patients of developing infectious diseases, care to prevent pneumonia is extremely necessary, especially within the hospital environment[6].

A measure for prevention of pneumonia is the elevation of the head of the bed to 30º - 40º. Several studies show that groups in the supine position were 6.8 times less likely to develop pneumonia than those who remained elevated. In other words, the results of research on the use of the elevated headboard revealed that the groups maintained above the recommended angle did not develop the disease[7].

Complete oral hygiene is widely recognized as another crucial measure in the prevention of pneumonia in hospitalized patients. This is because dental biofilm in hospitalized patients may contribute to the development of pneumonia[8].

Care measures with patients using nasoenteral tube are effective in preventing aspiration pneumonia, which is a serious complication that can be avoided by keeping the patient in a sitting or semi-sitting position, ie 30 to 45° during administration of the diet[9].

The implementation of this basic and almost cost-free measure in hospitalized elderly is the responsibility of the entire health team and can improve the safety and effectiveness of the actions in the care plan of these patients. Recognizing the flaws in the care process is indispensable to readjust the actions adopted and improve the prognosis of these patients, reducing costs and ensuring excellence in care.

In this sense, the general objective of this study was to evaluate the implementation of pneumonia prevention measures in hospitalized elderly. The specific objectives were: to characterize the hospitalized elderly regarding sex, age, education and cognitive level; describe the frequency of risk factors for pneumonia in the study population; analyze the prescription and implementation of care measures for prevention of pneumonia in the hospitalized elderly; and evaluate the association between risk factors and the prescription and implementation of preventive measures for nosocomial pneumonia.

METHOD

This is an observational cross-sectional study of quantitative nature. The study was held in a tertiary public hospital in southern Brazil, part of the SUS care network. Data collection took place in the second semester of 2015 and first semester of 2016, by means of medical records and interviews with elderly or caregivers.

The study population consisted of elderly people hospitalized for more than 48 hours. The exclusion criteria were: elderly people who were unable to answer the questions due to cognitive impairment or clinical conditions, and elderly people who did not have a companion able to respond. If the elderly were unable to answer the interview, answers were given by the main companion. If the companion was over 60 years of age, he/she would also be submitted to an assessment of the cognitive status by applying the MMSE (Mini Mental State Examination), an instrument with a total score of 30 points. The suggested cutoff points are: 19 = Illiterate; 23 = 1 to 3 years of schooling; 24 = 4 to 7 years of schooling; and 28> 7 years of schooling.

Elderly people who were not accompanied by a caregiver after three interview attempts were considered losses. Companions who did not stay for 4 or more consecutive hours with the elderly were also excluded. Some information regarding the 24 hours prior to the interview was collected from medical records. The collection took place from October 2015 to March 2016. Data were entered into a Microsoft Office Excel 2007 database. The Epi Info 3.5.4 was used for data analysis.

This research project is part of a mother project entitled Evaluation of protocols for prevention of diseases/iatrogenesis related to hospital care of elderly people, approved by the Research Ethics Committee of the State University of Londrina, CAAE

394013144.0000.5231, Opinion granted in 16/12/2014.

Finally, the variables were analyzed based on the risk factors for the development of pneumonia and measures to prevent this disease, such as: elevation of the head of the bed to 30º-40º, oral hygiene, care with the use of nasogastric tube, elevation of the head of the bed to 60º during administration of diet, care with inhalers, and hand hygiene.

RESULTS

The total number of elderly people who met the inclusion criteria were 220, 54 of whom were discharged from the hospital before being interviewed, and 24 could not be interviewed for various reasons such as surgery, refusal, transfer to the ICU, which characterized a loss of 36% of the elderly who were able to give the interview. Thus the total "n" of elderly patients who were included in the analyses was 142.

Of the total of 142 people, 70.4% (100) were female. Among the participants, 60% (75) were in the age group of 60 - 70 years; 37.6% (47) between 71 - 80 years; and 2.4% (3) between 91 - 94 years.

Regarding the MMSE score, 31.6% (45) had scores between 0 - 13 points; 64.7% (92) between 14 – 30 points; 3.5% (5) did not respond or were unable to respond. In the case of elderly patients who presented cognitive deficit, the interviews were conducted with the help of their companions.

As to the criteria defined by the research, 20 elderly had MMSE score lower than 13, and thus the questionnaires of these elderly were answered by their companions. However, during the collection process, in 37 other interviews it was necessary that the companions helped with some information. Therefore, there was collaboration of companions in 57 (40.42%) of the 142 questionnaires answered.

Of the companions, 14 (24.6%) were men and 43 (75.4%) women. Regarding education, 8 (14.5%) reported being illiterate, 47 (85.4%) reported having attended school, and 2 did not answer this question. Only 7 companions were over 60 years of age, and all presented MMSE scores greater than 18.

Five risk factors for development of pneumonia in elderly patients were used as basis for the research. The prevalence of risk factors for developing pneumonia among hospitalized elderly patients were: 17.6% (25) were smokers; 54.5% (77) had impaired mobility; 14.0% (20) had previous lung disease; 11.9% (17) used nasogastric tube; and 7.0% (10) used inhalers. Some elderly presented more than one risk factor.

The results on the prescription and care measures according to the risk factors analyzed - use of tube, use of inhalers, immobility of the bed – are presented below.

Table 1. Care measures proposed in nursing prescriptions and confirmation of their implementation by elderly patients or their companions - Londrina, 2015 -2016.

Measures	Total*	Prescription		Implementation confirmed	
		n	%	n	%
Oral hygiene	142	140	98,5	126	88,7
Elevation of the headboard to 30º- 40º	142	139	97,8	127	89,4
Use of inhalers	142	10	7,04	10	70
Hand hygiene	142	-	-	77	54,2
Use of nasoenteral tube	17	17	11,9	14	82
Verification of the position of the probe	17	9	52,9	9	52,9
Verification of gastric stasis	17	8	47	8	47
Elevation of the headboard to 60º during diet administration	17	8	47	5	29
Change of inhaler every 48h	10	2	20	1	10

* Total elderly who needed the measure evaluated.

We also evaluated the measures prescribed and implemented for elderly patients who reported previous lung disease, as shown in Table 2.

It can be observed that the care with the use of inhalers, the verification of the position of the tube, and verification of gastric stasis presented similar percentages in prescription and implementation of the action. In turn, oral

hygiene, elevation of the headboard, use of nasoenteral tube, elevation of the headboard to 60º during diet administration and change of inhaler had different percentages in prescription and implementation; oral care was measure with the most discrepant percentages, and changing inhalers had the smaller difference.

With regard to hand hygiene, this situation is not prescribed in the routine of the institution, but the performance of this action was confirmed by 54.2% of the elderly and caregivers.

Table 2. Care measures proposed in nursing prescriptions and confirmation of their implementation by elderly patients who reported previous lung disease or their companions. Londrina, 2015-2016.

Measures	Total	Prescription		Implementation confirmed	
		n	%	n	%
Oral hygiene	20	20	100	18	90
Elevation of the headboard to 30º- 40º	20	19	95	19	95
Use of inhalers	20	3	15	3	100
Use of nasoenteral tube	20	2	10	2	100
Hand hygiene	20	0	0	13	65
Change of inhaler every 48h	3	0	0	0	0
Verification of gastric stasis	2	2	100	2	100
Verification of the position of the probe	2	2	100	1	50
Elevation of the headboard to 60º during diet administration	2	2	100	1	50

It was found that 20 individuals of the total study population reported having had previous lung disease. Elevation of the headboard was prescribed in 95% of the cases, and the implementation of the action was confirmed in 95% of these cases.

Oral hygiene was prescribed in 100% of the cases and confirmed in only 90% of them. Among the patients, 20% were using nasoenteral tube; checking the position of the probe was prescribed in 100% of the times, but performed only in 50%. Verification of gastric stasis was prescribed in 100% of the cases, and carried out in 100%too. Elevation of the head board during diet administration was prescribed in 100% of the cases, and performed in 50%.

Among these patients, 15% were using inhalers; the measure of changing inhalers was not observed in any of the patients and there was no confirmation of its realization. Hand hygiene care was confirmed by 65% of patients.

Care of elderly patients with smoking history was also evaluated, as shown in the following table.

Table 3. Care measures proposed in nursing prescriptions and confirmation of their implementation by elderly patients who were smokers or their companions–Londrina, 2015-2016.

Measures	Total	Prescription		Implementation confirmed	
		n	%	n	%
Elevation of the headboard to 30º- 40º	25	23	92	22	88
Oral hygiene	25	25	100	24	96
Use of nasoenteral tube	25	5	20	5	100
Use of inhalers	25	3	12	3	100
Hand hygiene	25	0	0	16	64
Verification of the position of the probe	5	1	20	1	20
Elevation of the headboard to 60º during diet administration	5	2	40	2	40
Verification of the position of the probe	5	1	20	1	20
Change of inhaler every 48h	3	1	33	0	0

Among the elderly patients, 17.6% said to be smokers; in 92% of them, elevation of the headboard was prescribed, and in 88% the implementation of this action was confirmed.

Oral hygiene was prescribed in 100% of cases and confirmed in 96%. Twenty percent of the smokers used a nasoenteral tube; verification of the position of the tube was recommended in 20% and confirmed in 20%. Verification of gastric stasis was recommended in 40% of the cases and implemented in 40%. Elevation of the

headboard during diet administration was prescribed 40% and performed 40%.

It was found that 12% of the patients used inhalers; 33% had the care of changing inhalers prescribed, and in 0% this measure was confirmed. Hand hygiene was confirmed in 64% of the patients.

Care for patients with impaired immobility was also evaluated.

Table 4. Care measures for prevention of pneumonia registered in nursing prescriptions and confirmation of their implementation by elderly patients with impaired mobility or their companions. Londrina, 2015-2016.

Measures	Total	Prescribed		Implementation confirmed	
		n	%	n	%
Oral hygiene	77	76	98,7	61	79,2
Elevation of the headboard to 30º- 40º	77	74	96,1	60	77,9
Use of nasoenteral tube	77	15	19,4	15	19,4
Use of inhalers	77	8	10	5	6,4
Hand hygiene	77	0	0	41	53,2
Verification of the position of the probe	15	8	53,3	8	53,3
Verification of gastric stasis	15	8	53,3	8	53,3
Elevation of the headboard to 60º during diet administration	15	8	53,3	7	46,6
Change of inhaler every 48h	8	2	25	1	12,5

Elevation of the headboard was prescribed to 96.1% and confirmed by 77.9%, while oral hygiene was prescribed to 98.7% and confirmed by 79.2%. In the case of those who were using tube, verification of the position of the tube was indicated to 53.3% and implemented in 53.3%; verification of gastric stasis was indicated to 53.3% and confirmed in 53.3%;elevation of the headboard during diet administration was prescribed to 53.3% and performed in 46.6%.

Inhalation was indicated for 10% of the elderly surveyed, and this action was implemented in 6.4%. The replacement of inhalers was prescribed to 25% and performed in 12.5%. Hand hygiene was not prescribed, but was confirmed by 53.3% of the elderly or caregivers interviewed. The following table shows the relationship between indication and performance of the care measures.

Table 5. Care measures proposed in nursing prescriptions and confirmation of their implementation by elderly patients or their companions - Londrina, 2015 -2016.

Measures	Total	Checked		Report of implementation	
		n	%	n	%
Oral hygiene	142	140	98,5	119	83,8
Elevation of the headboard to 30º- 40º	142	132	92,9	127	85
Use of nasoenteral tube	142	17	11,9	17	100
Use of inhalers	142	10	7,04	10	100
Hand hygiene	142	0	0	77	54,2
Verification of the position of the probe	17	9	52,9	9	52,9
Verification of gastric stasis	17	8	47	8	47,0
Elevation of the headboard to 60º during diet administration	17	8	47	9	52,9
Change of inhaler every 48h	10	2	20	1	10

Elevation of the headboard to 30º- 40º was checked in 92.9% of prescriptions and implemented in 85%. Oral hygiene was checked in 98.5% and confirmed in 83.8% of the times.

Elevation of the headboard to 60º during diet administration was checked in 47% and its implementation was confirmed in 52.9%. The use of a nasoenteral tube was checked in 11.9% and performed in 11.9%. Verification of the position of the probe was checked in 52.9% and confirmed in 52.9%. Verification of gastric stasis was checked in 47% and confirmed in 47%. Among the patients, inhalers were used by7%; the exchange was checked in 20% and

performed in 10%. Hand hygiene was confirmed in 54.2% of the interviews.

DISCUSSION

The findings point to a set of care measures consistent with the need for prevention of pneumonia in hospitalized elderly patients. This demonstrates that the health care team, especially the nursing staff, is sensitized to provide safe care and acts in a manner consistent with the risks that elderly patients present due to complications during hospitalizations.

The present study evaluated the prescription and performance of the main precautions necessary for the prevention of pneumonia in the elderly. One of these precautions is oral hygiene, which has been a subject intensely addressed in studies on pneumonia. Oral hygiene procedures aimed at reducing microbial load have been found to reduce the risk of pneumonia[8]. Oral hygiene was one of the care measures with the highest percentage of prescriptions (98.5%) and confirmation of implementation (88.7), which shows that the knowledge of the nursing team is of the importance of this care.

The nurse is the professional who coordinates and manages the entire care process to be developed in relation to the patient and everything that involves him in the context of the hospital institution.

Nursing care requires a work process based on the Nursing Care Systematization (NCS), in which all phases must be fulfilled in order to ensure that the prescribed care be implemented and evaluated, leading to a specific care plan for hospitalized elderly at risk of developing pneumonia. Therefore, the professional should collect information, perform a physical examination, prescribe care measures, implement the interventions, check them and evaluate them[11].

It was found in the research that many of the patients reported the lack of implementation of the care measure prescribed, even being prescribed and checked. This finding calls attention to the need for effective supervision and proper communication with the user about the procedures performed. This result may have been influenced by the impossibility of direct observation by field researchers about the actual performance of the measures; the data was totally dependent on the informant's report. To minimize this limitation, one of the criteria was that the companion needed to have remained with the elderly for four consecutive hours before the interview.

There was a lower percentage of implementation by the users of hand washing. In this regard, it is possible to assume that the physical facilities of some wards where the research was conducted do not have the sink, and this implies that the professionals need to wash their hands in another place were users cannot see. This may partially explain this fact. This is a basic and essential care measure and the team is expected do it in 100% of cases.

Care with nasogastric feeding also had a low frequency of implementation and prescription. Non-prescription is likely justified by the routine established in the institution through protocols. However, failure to register the care provided exposes the service to legal issues and may facilitate the non-performance of such measures. Another important aspect is also the constant replacements and changes in the nursing staff, which may cause the abandonment of practices established in protocols.

The quality of care needs to be constantly evaluated because many measures, which should have been performed, were not confirmed by users and caregivers.

This study warns of the need for planning the care for elderly patients in the hospital environment, which must be individualized and based on the patient's history. Only by doing so, will it be possible to provide adequate care to prevent the development of nosocomial pneumonia, according to the risk factors present in the clinical history of the elderly. The results showed that even for elderly patients who were former smokers with a history of lung disease and immobility, some care measures were not performed. Nursing needs to have its assistance solidly based in clinical evidence that prioritizes and indicates the risks to which each patient is exposed.

There is a high number of elderly people who need care in the hospital network. An important aspect of the present study was the fact that it was performed in a tertiary hospital, considered

a reference, linked to the SUS. The study thus illustrates the real conditions of care for elderly patients assisted in the public system. Another positive factor was the use of different secondary information sources through medical records and interviews. The major limitation of the study was the unfeasibility of direct observations of the care measures.

CONCLUSION

Population aging is a challenge for all health professionals, and as this population grows, the demand for care grows. Thus, it is extremely important that the nursing team be able to identify the needs of elderly patients to avoid the emergence of morbidities caused by hospitalization.

Primary care for prevention of pneumonia is prescribed but not always implemented, as not all of such measures presented coherence between prescription and implementation, and oral hygiene was the measure with the greatest discrepancy. Hand hygiene is not prescribed and is not yet a technique performed by 100% of professionals, although washing hands is a basic measure.

Smokers with previous history of pulmonary disease presented the closest percentages between prescription and performance of care measures. The data also showed that care is checked, but not always implemented, thus showing a flaw in the coherence between what should be done and what is actually done.

The information reveals the need not only to prescribe care for hospitalized elderly, but also to cultivate efforts to ensure that care is provided to prevent complications such as pneumonia.

Knowledge about the care measures and understanding the risks and injuries become indispensable to guide the work process and implement strategies to overcome these data. The identification of the importance of these care measures will make it possible to contribute, in fact, to the prevention of pneumonia, reducing the impacts of morbidity on the patient.

Therefore, it is necessary that in addition to prescribing and checking measures, the measures be constantly evaluated to provide quality care, aiming at reducing hospitalization costs and promoting a better prognosis for the patient.

PREVENÇÃO DE PNEUMONIA EM IDOSOS HOSPITALIZADOS

RESUMO

Introdução: O aumento da expectativa de vida e consequente envelhecimento populacional é um grande desafio para o setor da saúde. Diante deste contexto espera-se identificar as vulnerabilidades do processo de assistência para readequação das intervenções e garantir a excelência no cuidado ao idoso. **Objetivo**:avaliar a implementação de medidas de prevenção da pneumonia em idosos hospitalizados.**Método**: estudo transversal.A coleta de dados ocorreu em um hospital público terciário, por meio de análise de prontuários e entrevista com idosos ou acompanhantes. A análise dos dados foi realizada por meio de programa estatístico Epi Info.3.54 Estudo aprovado pelo Comitê de Ética CAAE 394013144.0000.5231.Foram avaliados os cuidados para prevenção de pneumonia em 142 idosos. **Resultado**: constou-se que os cuidados foram prescritos na maioria das vezes, sendo que a maior diferença foi encontrada em relação à checagem e confirmação da realização do cuidado. O cuidado de cabeceira elevada foi checado por 92,9% dos profissionais e foi confirmada sua realização por 85% dos idosos. Em relação ao cuidado de higiene oral também foi encontrada uma diferença em relação à checagem, que foi de 98,5%, e sua confirmação da realização 83,8%. **Conclusão**: há necessidade de zelar e garantir a implementação das ações prescritas e da sua checagem para o desenvolvimento seguro e eficaz do plano de cuidado, pois, muitas vezes o cuidado prescrito é checado, mas sua realização não é confirmada na mesma porcentagem pelo usuário, o que traz à tona uma discussão importante sobre a qualidade do atendimento prestado ao idoso hospitalizado.

Palavras-chave: Pneumonia. Idoso. Prevenção de doenças. Assistência hospitalar.

PREVENCIÓN DE NEUMONÍA EN ANCIANOS HOSPITALIZADOS

RESUMEN

Introducción: el aumento de la expectativa de vida y consecuente envejecimiento poblacional es un gran reto para el sector de la salud. Ante este contexto, se espera identificar las vulnerabilidades del proceso de asistencia para readecuación de las intervenciones y garantizar la excelencia en el cuidado al anciano. **Objetivo**: evaluar la implementación de medidas de prevención de la neumonía en ancianos hospitalizados. **Método**: estudio transversal. La recolección de datos ocurrió en un hospital público terciario, por medio de análisis de registros médicos y entrevista con ancianos o acompañantes. El análisis de los datos fue realizado por medio de programa estadístico *Epi Info.3.54*.

Estudio aprobado por el Comité de Ética CAAE 394013144.0000.5231. Fueron evaluados los cuidados para prevención de neumonía en 142 ancianos. **Resultado**: se constató que los cuidados fueron prescritos en la mayoría de las veces, y la mayor diferencia fue encontrada con relación al chequeo y a la confirmación de la realización del cuidado. La atención de cabecera elevada fue chequeada por 92,9% de los profesionales y fue confirmada su realización por 85% de los ancianos. Respecto al cuidado de higiene oral también fue encontrada una diferencia en cuanto al chequeo, que fue de 98,5%, y su confirmación de realización un 83,8%. **Conclusión**: existe la necesidad de cuidar y garantizar la implementación de las acciones prescritas y de su chequeo para el desarrollo seguro y eficaz de la planificación de cuidado, pues, muchas veces el cuidado prescrito es chequeado, pero su realización no es confirmada por el mismo porcentaje por el usuario, lo que genera una discusión importante sobre la calidad de la atención prestada al anciano hospitalizado.

Palabras clave: Neumonía. Anciano. Prevención de enfermedades. Atención hospitalaria.

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