

Pressure Injuries in Dependent Individuals within Primary Care: A Descriptive Study

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Abstract

Introduction. Pressure injuries represent a prevalent and serious health issue among dependent individuals, especially within the primary care context. These injuries contribute to increased morbidity, diminished quality of life, and greater healthcare resource utilization. Accurate and comprehensive clinical records are essential not only for guiding individual patient care but also for supporting scientific research. They enable the identification of risk factors, monitoring of outcomes, and development of evidence-based interventions. The Aim of this study is to analyse the informatic nursing records of dependent persons in a Portuguese Primary Health Care Unit (PHCU), within the scope of the prevention and treatment of pressure ulcers/injuries (PU/PI).

Methods. Retrospective analysis of electronic health record database from 112 patients registered in the "Dependents Program" of the Informatic System SCLínico® of a Portuguese Primary Health Care Unit during 2019. Beyond sociodemographic characterization, the data analysis included the following variables: self-care level; PU/PI risk; co-morbidities; nutritional risk; PU/PI classification, anatomical location, assessment, and type of treatments performed; pain and the family caregiver's "ability" and "knowledge" to prevent PU/PI.

Results. During 2019, 80.4% of the participants had the self-care level recorded and 83.0% had the PU/PI risk assessment recorded. The nutritional risk assessment was not recorded in 90.2% of the participants. The PU/PI assessment through RESVECH 2.0 was registered in 72.2% of the participants. The treatment implemented and the pain assessment were documented in a residual way.

Discussion and Conclusions. The findings reveal notable strengths and gaps in the documentation practices related to

pressure injury prevention and management in primary care. While a majority of participants had their self-care level and PU/PI risk assessments recorded, critical areas such as nutritional risk assessment were largely neglected. Given the well-established link between nutrition and skin integrity, this represents a significant oversight. The use of the RESVECH 2.0 tool for PU/PI assessment was observed in great percentage of participants, indicating moderate integration of standardized assessment tools into clinical practice. However, the documentation of both treatment interventions and pain assessment was minimal, suggesting these essential aspects of care are not being systematically recorded. These findings underscore the need to strengthen comprehensive and consistent record-keeping, as incomplete documentation can hinder both the continuity of care and the generation of robust scientific evidence.

Keywords: Nursing Assessment, Nursing Records, Pressure Injury, Pressure Ulcer, Primary Health Care

Introduction

The prevention and treatment of pressure ulcers/injuries (PU/PI) is a growing concern¹⁻⁵ based on the demographic changes which leads to an increase in elderly and dependent population.⁶ Aging represents an important PU/PI development risk factor and influence the healing process, since it promotes changes in the skin and its support structures, making it more vulnerable to pressure and friction and shear forces.⁷

As a result of global population aging, there is an increase in the incidence of chronic diseases and in the prevalence of dependent persons, also leading to an even higher risk of developing a PU/PI⁸ in different care settings.⁹⁻¹¹

This risk of developing PU/PI is complex and multifactorial including intrinsic and extrinsic factors, making this an important public health problem in Portugal¹² with impact on family dynamics.^{13,14}

To determine the risk of developing PU/PI and to (immediately) access the relevant clinical information will allow professionals/nursing team to define a preventive and/or a curative care plan, personalized and adapted to each person and respective family. This care plan should also include the knowledge and training of the family caregivers, which play an important role in this domain.^{13,15,16}

At the same time, we have verified a strong

technological development and consequent improvement of the Health Information Systems (HIS). The documentation, management and research tools promote the quality and continuity of care,¹⁷ data comparison and the development of scientific knowledge.¹⁸

Based on these concerns, this study aims to analyse the informatic nursing records of dependent persons in a Portuguese Primary Health Care Unit (PHCU), within the scope of the prevention and treatment of PU/PI.

In order to address this main goal, specific aims were defined as follow: (1) To determinate incidence, prevalence and healing rates of PU/PI in this PHCU; (2) To characterize the dependent persons of this PHCU, considering their dependence level, PU/PI development risk and nutritional risk; and (3) To characterize each PU/PI according to their category/stage, anatomical location and the assessment performed through RESVECH 2.0.

Methods

Observational, retrospective and descriptive study with a quantitative methodology.

The participants included in this study were registered in the “Dependents Program” of the Informatic System SClínico® of a North Portuguese Primary Health Care Unit during 2019.

To decrease the risk of bias, the exclusion

criteria were defined as follow: (1) To be institutionalized in a nursing home or other care facilities/institutions in the period under analysis; and (2) To have a registered death during the study period.

Throughout the entire research process, the confidentiality of the data and access to the results were strictly respected, which were solely used for research purposes, respecting the 4 ethical principles proclaimed by.¹⁹ The study was performed after Northern Regional Health Administration and Ethics Committee approval (Reference Number: CE/2021/67).

Data were collected by the PCHU nursing team, based on the nursing records of the Informatic System SClínico® (in the areas “User Identification”, “Initial Assessment” and “Surveillance”). The data were coded, anonymized and archived in a separate folder and handed over to the researcher, guaranteeing the confidentiality of the subjects and the collected data.

Beyond sociodemographic characterization (age, gender and educational qualifications), data collection also included the following variables: level of self-care (Barthel Index), risk of developing PU/PI (Braden Scale), comorbidities (according CIAP-2), nutritional risk (NRS-2002 Scale), anatomical location, PU/PI classification and assessment (RESVECH Scale 2.0), pain assessment (Visual Analog Scale or Numerical Scale), type of treatments performed at the PU/PI and “ability” and “knowledge” of the family caregiver to prevent PU/PI.

The analysis of sociodemographic and clinical data was carried out using the IBM® Statistical Package for Social Sciences® version 23.0 (SPSS).

Results

Sample characterization

The sample participants (n=112) were aged between 14 and 102 years, with an average of 79.47 (± 17.51) years. Half of the participants (n=56) were between 81 and 90 years old, highlighting the fact that 87.6% of participants were aged between 71 and 90 years old (Table 1). It was also found that most of the participants were women (61.6%). Considering the educational qualifications, it was found that 53.6% of the participants only had the primary education.

Table 1. Sociodemographic characterization of the participants.

Participants (n=112)		n	%
Age	<18	1	0.9
	18-60	9	8.0
	61-70	4	3.5
	71-80	21	18.8
	81-90	56	50.0
	>90	21	18.8
Gender	Female	69	61.6
	Male	43	38.4
Educational qualifications	Illiterate	25	22.3
	1 st cycle	60	53.6
	2 nd cycle	4	3.6
	3 rd cycle	1	0.9
	High School	3	2.6
	Participants without records	19	17.0

Considering the clinical characterization of our participants it was possible to identify that they present an average of 9.65 (± 5.57) diagnosed pathologies. As far as the distribution of these pathologies by International Classification of Primary Care 2nd Edition (ICPC-2) chapters was concerned, there was an average of 5.5 (± 2.39) chapters per participant. Chapter K (Circulatory), Chapter L (Musculoskeletal) and Chapter T (Endocrine, Metabolic and Nutritional) present higher averages of diagnosed pathologies with approximately 2 pathologies per participant (1.9, 1.6 and 1.5 respectively).

In the “self-care assessment”, 56.0% of participants had a “Severe Dependence” and 36.3% had a “Moderate Dependence”. Regarding the risk of developing PU/PI, 55.9% of participants were at “High Risk”. All evaluated participants were “No Nutritional Risk”.

On January 1st, 2019, only 1 participant had a PU/PI registered, resulting in a PU/PI point prevalence of 0.9%. During 2019, 13 participants developed a new PU/PI, resulting in an PU/PI incidence of 11.6%. On December 31st, 2019, 5 participants had a PU/PI registered, resulting a PU/PI point prevalence of 4.5%, which indicates an increase of 3.6 percentual points compared to the first assessment.

The total number of PU/PI registered in the period under analysis was 36. It should be noted

that 76.9% of participants with PU/PI had more than 1 PU/PI, with an average of 2.77 ($\pm 1,48$) PU/PI per participant with PU/PI.

Regarding the PU/PI anatomical location, the trochanters emerged as the most frequent area (38.9%), followed by the sacrum (33.0%) and the heels (22.2%). Considering the PU/PI category/stage in the first record, 69.2% of the PU/PI were classified as category/stage II, and only 7.7% were classified as category/stage IV. There were no records of PU/PI category/stage I in the first record.

According to the first PU/PI assessment through RESVECH 2.0, we obtained an average score of 7.73 points (SD=2.342) and a maximum score of 14. During 2019, 27 of the PU/PI (75%) were healed, with an average healing time of 50.56 days (SD=68.179).

Analysis of Nursing Records

Regarding self-care dependence assessments (Table 2), it was found that 90 (80.4%) participants had at least one record, within an average of 2.04 assessments per participant. Nevertheless, only 38 (33.9%) participants had this specific assessment recorded in both semesters of 2019.

Analysing the PU/PI risk assessment, we identified that 93 (83.0%) participants had at least one record, within an average of 2.59 assessments per participant. However, none of the participants presented a monthly PU/PI risk assessment recorded and only 7 (6.3%) participants had at least one assessment recorded in the 4 trimesters.

Table 2. Nursing records related to self-care dependence and PU/PI risk assessment.

Self-care dependence assessment	n	%
Participants without records	22	19.6
Participants with records	90	80.4
Participants with records in 1 of the semesters	52	46.4
Participants with records in 2 semesters	38	33.9
PU/PI risk assessment	n	%
Participants without records	19	17.0
Participants with records	93	83.0
Participants with records in 1 trimester	47	42.0
Participants with records in 2 trimesters	24	21.4
Participants with records in 3 trimesters	15	13.4
Participants with records in 4 trimesters	7	6.3
Total	112	100

Regarding the records of nutritional risk assessments, these are non-existent in 101 (90.2%) participants. Additionally, more than a half (61.5%) of the participants with PU/PI did not have any records of nutritional assessment.

Considering the nursing diagnoses related to the family caregiver (Table 3), 43 (38.4%) participants have diagnostic records relating to the family caregiver's ability to prevent PU/PI, and 50 (44.6%) participants have diagnostic records relating to the family caregiver's knowledge to prevent PU/PI.

Table 3. Nursing records related to the diagnoses of the family caregiver's ability and knowledge to prevent PU/PI

Family caregiver's ability	n	%
Participants without records	69	61.6
Participants with records	43	38.4
No potential to improve the family caregiver's ability to prevent PU/PI	2	1.8
Potential to improve the family caregiver's ability to prevent PU/PI	14	12.5
Family caregiver's ability to prevent PU/PI	27	24.1
Total	112	100
Family caregiver's knowledge	n	%
Participants without records	62	55.4
Participants with records	50	44.6
Potential to improve the family caregiver's knowledge to prevent PU/PI	38	33.9
Family caregiver's knowledge to prevent PU/PI	12	10.7
Total	112	100

During 2019, 36 PU/PI were documented by assessment, category, treatment and pain (Table 3). In 13 (36.1%) records the PU/PI category/stage was clearly identified and in 26 (72.2%) records the PU/PI assessment through RESVECH 2.0 was performed with an average of one assessment each 7.09 days, with a minimum of 1.5 days and a maximum of 19.5 days. Only 3 (8.3%) of the records analysed clearly document the initial treatment provided to the PU/PI.

Of the 13 participants with PU/PI, only 3 (23.1%) have recorded pain monitoring, with no record being verified for the remaining participants.

Table 4. Nursing records related to PU/PI assessment, category, treatment and pain.

PU/PI Records (n=36)	Yes (n, %)	No (n, %)
PU/PI Assessment	26 (72.2%)	10 (27.8%)
PU/PI Category/Stage	13 (36.1%)	23 (63.9%)
PU/PI/ Treatment	3 (8.3%)	33 (91.7%)
Pain Assessment	3 (23.1%)	10 (76.9%)

Discussion

Regarding the sample characterization there was a similar agreement with various studies with dependent participants already published^{20–22} The averages age and the predominance of woman among the dependent population of our study is consistent with national^{23–26} and international literature.^{27,28}

With regard to educational qualifications, Fundação Francisco Manuel dos Santos state that elderly population usually had, low education, with predominance of basic education,²⁹ similar to the data obtained in this study.

The clinical characterization of our sample is similar to a study developed by Gonçalves,²⁵ which identified circulatory system pathologies as the most frequent comorbidity in dependent persons. In our sample, circulatory/cardiac, endocrine and musculoskeletal problems presented high prevalence which according to Cascão et al.,²⁰ Laranjeira & Loureiro,²¹ Souza et al. al.²² and Aguiar et al.³⁰ could lead to the development of PU/PI.

Our results showed high levels of self-care dependence which is in line with several studies that were developed with dependent Portuguese population.^{25,31,32}

Regarding the risk PU/PI development, the results obtained were congruent with previous data, since higher levels of functional dependence increase this (specific) risk.^{8,33,34} However our results were lower than those recorded in a study carried out in Azores with dependent persons, which identified that 86% of participants presented “High Risk” of PU/PI development.³⁵

Since the risk of developing PU/PI is assumed as the first step towards the prevention of this type of injuries,^{2,16} it was expected that this intervention would be applied to all dependent persons. However, our data revealed that 19 (17.0%) of the participants didn’t have this specific assessment recorded in Informatic System SClínico®.

This data is especially important because our Quality and Safety Committee defined that this assessment should be performed at least monthly,³⁶ which was not the case for any of the study participants.

When we analyse the nutritional risk assessment records, it was found that none of the assessed participants was classified as “at risk”. These data are not consistent with the results obtained by³⁷ in a study developed in home care context, which identified that a large number dependent persons were at risk of malnutrition. According to DGS, the early diagnosis of malnutrition will allow (in most cases) to implement effective and low-cost treatments. In this way, nutritional risk screening should be an important strategy to identify patients who need nutritional intervention.³⁸

The global analysis of our data showed that more than 90% of users did not have a nutritional risk assessment record, which is assumed to be a worrying result, since the nutritional deficit is assumed to be an important factor that enhances the development of PU/PI and/or limiting their healing process.^{37,39}

The incidence of PU/PI presented in this study revealed values in line with those described by the Instituto da Qualidade em Saúde,⁴⁰ which pointed to values between 2 and 13%, in Portugal. According to Lyder,⁴¹ these values could vary between 0% and 17% in home context, and ideally they should be less than 2%, as verified in this study.

The PU/PI point prevalence reported in this study present lower values than those described in the Azores and in Spain, also in the home context (9.4%, 26.5% and 8.3%, respectively).^{35,42,43} International studies also revealed higher values than those obtained (between 3% and 20%).^{44–47}

Regarding the ratio of PU/PI per participant, the data obtained were similar to those presented for other contexts. Studies carried out in 2 Portuguese hospitals obtained a ratio of 1.76⁴⁸ and 2.60 PU/PI¹⁰ per participant while European studies revealed values between 1.4 and 1.73 PU/PI per participant.^{49,50}

The anatomical locations of the most frequent PU/PI (trochanter, sacrum and heels) are in line with the existing literature: Sardo, Simões, Alvarelhão, Simões, et al.¹¹ obtained values greater than 20% for the sacrococcygeal region and heels, while Cruz,⁴⁸ also presented values above 20% for these three anatomical locations.

Studies carried out in Germany and Spain obtained identical results, with emphasis on the sacrum and heels, with values greater than 30% and 24%, respectively.^{51,52}

In our study nearly 70% of PU/PI recorded were classified as category/stage II. Similar results were obtained in other Portuguese studies.^{48,53} Discrepant values were obtained by Yashchuk,⁵⁴ Sardo, Simões, Alvarelhão, Costa, et al.¹⁰ and Sardo, Simões, Alvarelhão, Simões, et al.,¹¹ who reported higher prevalence of PU/PI category/stage I in their studies.

Unfortunately, in about 64% of the cases, the records regarding the PU/PI category/stage were not carried out at the time of the PU/PI diagnosis. According to the DGS,¹² the PU/PI characterization and respective registration is crucial for the correct monitoring of the care provided, allowing the definition and establishment of an effective care plan.

However, according to Alves et al.,⁵⁵ this categorization is only used to classify the depth of the affected tissues, not proving to be effective for monitoring the PU/PI evolution/healing process. For this purpose, there are valid and reliable assessment instruments that allow correct and continuous wound monitoring.^{56,57}

EPUAP et al.² recommends that the PU/PI assessment should be performed at least weekly in order to monitor the healing process, contributing to the choice of the appropriate treatment.⁵⁸ Our data showed that the PU/PI assessment through RESVECH 2.0 was performed with an average of one assessment each 7.09 days which is in line with a declaration of good practices.² This data is especially important since RESVECH 2.0 is recently validated for Portuguese Population and incorporate in Informatic System SClínico®.⁵⁹

Regarding the treatment instituted, our analysis also revealed a deficit of records, since only about 8% of the cases had these data documented. According to Antunes et al.⁵⁶ and Andersson, Imberg & Rosengren,⁶⁰ recording the treatment performed is essential for monitoring the wound healing process.

In this study, a healing rate of 75% was obtained for the period under analysis, with an average healing time of about 50 days. These values also found agreement with Luz et al.,⁶¹ who indicated healing averages between 30 and 70 days.

Since all study participants were registered

in the “Dependents Program” of the Informatic System SClínico®, the self-care assessment should be recorded in 100% of the cases. Unfortunately, only about 80% of our participants had at least one self-care assessment record. Furthermore, our Quality and Safety Commission, defined as a minimum criterion, a half-yearly assessment in this area.³⁶ The data analysed revealed that only around 34% of the participants’ records complied with the defined criteria. There is clearly a deficit in nursing documentation. Different results from these were obtained by Silvestre,⁶² with this important assessment present in all clinical processes.

With regard to the family caregivers, it should be noted that there were no records regarding their ability and knowledge to prevent PU/PI in more than 60% and 55% of cases, respectively. Since this is a study carried out in a community context, the role of the family caregiver is crucial for the success of the established care plan. According to Rodrigues & Soriano⁶³ and Dopierala et al.,⁶⁴ it is essential to train them for an efficient and effective prevention of PU/PI. In this way, these data revealed a marked deficit of nursing records at this level, being lower than those demonstrated by Rodrigues & Soriano,³⁵ in a study developed in home context in Azores, which pointed to rates of teaching of the (family) caregivers greater than 70%.

This study reported a deficit in pain assessment records of participants with PU/PI. This results are in line with those described by Silvestre,⁶² in a study developed in hospital context that demonstrated that this is an undervalued area in the nursing records. Regular pain assessment in people with PU/PI is recommended by EPUAP et al.² and DGS,⁶⁵ assuming itself as an indicator of best professional practices, so these values should be close to 100%.

Conclusions

The analysed records allowed the characterization of participants with high risk of PU/PI development and the participants that already had and/or developed a new PU/PI in this Portuguese Primary Care Unit, as well as understanding the type of information recorded in the Informatic System SClínico®.

These are dependent persons with an average age of around 80 years, with a higher prevalence

of women and low educational level. Clinically, the participants mostly have a severe dependence level and associated multi-comorbidities, with emphasis on circulatory, musculoskeletal, endocrine, metabolic and nutritional problems. With regard to the risk of PU/PI development, just over a half were at “high risk”. The PU/PI point prevalence at the end of 2019 was 4.5% and the PU/PI incidence in the same year was 11.6%.

The participants with PU/PI had an average of 2.77 PU/PI identified, being the trochanters, sacrum and the heels the most problematic anatomical locations. Most of the PU/PI recorded were classified as category/stage II in the first assessment.

Although most of the participants had records related to “self-care assessment” and “PU/PI risk assessment”, these data were not systematically documented on a six-monthly, quarterly and/or monthly basis. The records related to “nutritional risk assessment” and “pain assessment” were residual.

Regarding the family caregiver information, in more than half of the files, there were no records referring to the assessments of their knowledge and abilities.

As far as PU/PI documentation is concerned, there should be a greater concern with the nursing records quality, highlighting the PU/PI assessment, the PU/PI category/stage, and the treatment implemented.

To carry out this study, data were extracted manually and individually for each participant by nursing team research cooperating. This limitation in the information systems implies the absence of some records, which limits the quality and speed of access to data for monitoring care and promoting evidence-based practice.

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