

Preventive care for individuals with deep pressure ulcers in Sweden living at home: A cross-sectional study

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Abstract

Background and Aims: Several factors exist regarding the risk for, healing and prevention of pressure ulcers (PUs). A mobile PU team with an individualized holistic approach adapted to the home or outpatient clinic setting could be beneficial for the prevention, and management of PUs.

Aims: To describe the mobile PU team's interventions among individuals who had deep PUs and were living at home. Another aim was to describe the patients' perceptions of the quality of the care and having a deep PU.

Methods: A quantitative study with a cross-sectional design. At an outpatient clinic, a mobile PU team was established to perform and follow up PU prevention interventions and advanced wound care treatment at home and at the outpatient clinic. All adult patients with existing deep category four PUs remitted to the outpatient clinic were asked to participate, and 16 out of 24 individuals consented. Instruments used for data collection were "Quality from the Patient's Perspective," "Wound-Quality of Life," "Modified Norton Scale," and a study developed protocol for the mobile team's PU interventions.

Results: The patients chose home visits 20 times and outpatient clinic visits 89 times. In total, 8–13 interventions per participant were performed by the mobile team. The results show that having PUs affected the participants' perceptions of care and general well-being. The PUs did not heal completely but they did improve, six patients underwent flap surgery.

Conclusion: When organizing care regarding patient safety for patients with deep PUs, it is important to consider the patient's perspective and well-being and to involve patients in their care plans. Home care is perhaps not the only way of caring; other aspects, in addition to telemedicine, could be an option.

KEYWORDS

home care, intervention, outpatient clinic, pressure ulcers, prevention

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1 | INTRODUCTION

Pressure ulcers (PUs) are a global problem in all healthcare, and a serious problem for patient safety and a cost for society. PUs cause human suffering, pain and a decreased health-related quality of life for those developing them.^{1,2} PUs also entail high costs for the healthcare system. It is, therefore, essential that healthcare is organized in a way that provides effective wound treatment and offers support regarding how to prevent new PUs.

According to the National Pressure Ulcer Advisory Panel, the European Pressure Ulcer Advisory Panel and the Pan Pacific Pressure Injury Alliance (EPUAP/NPUAP/PPPIA) 2019, a PU is defined as localized damage to the skin and/or underlying tissue that is a result of pressure or pressure in combination with shear. Severity can range from non-blanchable erythema to partial-thickness skin damage and full-thickness tissue damage. Full-thickness tissue damage is mainly caused by sustained compression of subcutaneous tissue located over bony prominences.³ To prevent PUs, a head-to-toe skin and soft tissue assessment should be performed together with a comprehensive PU risk assessment.³ Furthermore, preventive interventions should be tailored to the specific needs and lifestyle of the individual, whether they are performed in the context of a hospital or home setting.³⁻⁵ Therefore, a holistic approach is needed to consider each individual's specific needs and resources.³

The time it takes for PUs to heal depends on several factors, for example, intrinsic factors,^{6,7} wound management,⁸ the patient's ability to offload the ulcer,³ patient involvement^{3,9,10} and the healthcare organization.^{9,11} There are several other factors that impact the risk of developing new PUs, such as support surfaces, positioning, internal/external patient factors, activities, and environmental support. When clinical decisions are made based on all these factors, it is necessary to use a holistic approach in the management of PUs.¹²

Prevention and treatment of PU should address both local wound treatment and include interventions such as support surfaces, repositioning, optimizing nutrition, and implementing good skin care practices.³ Preventive interventions should be tailored to the specific needs and lifestyle of the individual, whether they are performed in the context of a hospital or home setting.

Patients who are in need of prevention intervention during the treatment of deep PUs are often at home. A Cochrane review from 2018 examined the effects of different provider-orientated interventions and the impact the organization of the healthcare services had on the prevention and treatment of PUs. The authors concluded that it remained unclear how the organization of healthcare services impacts the prevention and treatment of PUs.¹³ A recent scoping review concluded the need of tailored education and information about PU prevention, the need of information varies over time, and it depends on the individuals.¹⁴

Healthcare must be organized in a cost-effective way, while at the same time delivering care that is suitable for both the individual and the organization. One healthcare organization in central Sweden started a mobile team with the intention to support PU prevention interventions in the patients' homes. More research in this area could be of value for a more person-centered approach. Therefore, this study aimed to describe the mobile PU team's interventions among individuals who had deep PUs

and were living at home. Another aim was to describe the patients' perceptions of the quality of the care and having a deep PU.

2 | METHODS

2.1 | Design

The cross-sectional design was used.

2.2 | Sample and setting

All adult patients who were remitted to an outpatient clinic with an existing category four PUs during the 1-year inclusion period were invited to participate in the study. The study setting was one surgical outpatient clinic located in the middle of Sweden.

2.2.1 | The outpatient clinic's mobile team

At the outpatient clinic, a mobile PU team was established to initiate PU prevention interventions both in the patients' homes and/or during visits to the outpatient clinic. The mobile team consisted of one registered nurse and four assistant nurses with advanced knowledge in wound care. The patients were informed about the objective of the mobile team and the opportunity for planned visits to their homes. The first visit took place at the outpatient clinic, where the aims were: (1) to start advanced wound care treatment of the existing PU and (2) to participate in multidisciplinary rounds (not reported in this manuscript). Members of the multidisciplinary team consisted of the patient, physicians (infection specialist, surgical specialist, etc.), dietician, physiotherapist, occupational therapist, registered nurse, and assistant nurses. The main objective of the multidisciplinary round, involving all professionals, was to discuss and develop an individual care plan for the treatment of PU.

The mobile team PU's objectives were to increase knowledge and initiate PU prevention interventions during wound healing. The mobile PU team's interventions were based on current national and international guidelines for the prevention of PUs.¹⁵ The frequency of the visits was made according to the patient's wishes and perceived needs. The mobile team gave options to the patients to choose wherever they wanted to be treated, at home or at the outpatient clinic. Between the visits, the mobile PU team was available to answer questions via telephone.

2.3 | Data collection

2.3.1 | Measures

Mobile PU teams study protocol

A study protocol was developed and used to document the mobile team's PU interventions, patient demographic data (age, gender, living conditions), and PU risk assessment with the Modified Norton Scale (MNS).

The MNS consists of seven subscales, such as mental condition, activity and mobility, food and liquid intake, incontinence, and general condition. With a score of ≤ 20 , the patient was considered to be at risk of developing a PU.¹⁶ A PU card was used to classify the PUs, which included photos of the category one to four PUs.¹⁵

Questionnaires.

Quality from the Patient's Perspective. To evaluate the mobile team in regard to PU prevention, the participants answered questions from the Quality from the Patient's Perspective (QPP), which is a theoretical model addressing the quality of care from the patient's perspective.¹⁷ Each item from the QPP was answered in two ways: (1) how the patient perceived the care received; their perceived reality (PR scale), and (2) how important the patient considered each aspect of care was; their subjective importance (SI scale). The PR scale measurements were acquired using a sentence such as "This is what I experienced ..." with statements, for example, the best possible information was given to me from the mobile team, and were scored on a 4-point scale ranging from 1 (*do not agree at all*) to 4 (*completely agree*). The items measuring the aspects on the SI scale were acquired using a sentence that asked how important, for example, a treatment of a particular character was, and they also had responses on a 4-point scale ranging from 1 (*not very important*) to 4 (*highly important*). Each item also had a "not applicable" response alternative. Previous research has shown that the tool has a high validity,¹⁸ and psychometric values have been tested in different languages and in different contexts.^{19,20}

Wound-Quality of Life. To evaluate perceptions from having a PU, questions from the Wound-Quality of Life (Wound-QoL) were used. The Wound-QoL consists of 17 items that relate to three subscales: body (items 1–5), psyche (items 6–10), and everyday life (items 11–16). Item 17 ascertains the financial burden associated with the wound. The items are rated by the respondents on a 5-point Likert scale where 0 = *not at all* and 4 = *very much*. Higher scores indicate greater impairment of the quality of life. The time frame for the information is set retrospectively to the previous 7 days. This has been proven to be a reliable and validated tool in Sweden²¹ as well as across the rest of Europe.²²

The questions from the QPP and the Wound-QoL were distributed to the participants at the outpatient clinic. The participants received information about the objective of the study and information about questionnaires, and to respond to the them at home. When the participants had answered the questionnaires at home, they were informed to bring the questionnaires to the outpatient clinic and put them in the dedicated box for the project.

2.4 | Data analysis

Frequency, mean, median, range, and standard deviation were used to summarize the data and the demographic characteristics. All

analyses were performed using the SPSS 28. IBM Corp, Armonk, New York.

2.5 | Ethical consideration

The study was approved by the Regional Ethical Board in Sweden (Dnr 2015/345). Before starting, the research team presented both written and oral information to the staff at the outpatient clinic. The patients were informed about the study both orally and in writing and they were informed that they could withdraw at any time without explanation and without it affecting their future care. Sixteen patients agreed to participate in the study, and they also accepted the invitation to receive a home visit. Approval had been granted by the original authors for the QPP and Wound-QoL to be used in this study. The study was carried out in accordance with the Helsinki Declaration.

3 | RESULTS

3.1 | Patients' characteristics and PU status

Twenty-four patients were invited to participate in the study, and 16 (66.7%) consented to participate. Of these, seven were women and nine were men. Their ages ranged from 23 to 84 years, with a mean age of 58.8 years (SD = 16.71). Eleven (68.7%) were living together with another person(s) and five lived alone. Seven patients (43.8%) were at risk for developing new PUs, according to the MNS. All 16 patients had category four PUs, and five patients also had one or two additional categories one to three PUs. The PUs ($n = 23$) were located on the sacrum ($n = 12$), hips ($n = 5$), heels ($n = 5$), and other locations ($n = 1$). Six patients underwent skin flap surgery to complete cutaneous closure, four of which had complete recovery from their PUs. The PUs in the remainder of the patients did not heal completely, but there was evidence of improvement.

3.2 | Visits and mobile team PU prevention interventions

During the study period, the mobile team made 20 home visits, which lasted 45–265 min. The patients also visited the outpatient clinic 86 times, with each visit lasting 15–90 min. Advanced wound care treatment of the PUs was included during the visits according to need. The mobile team discussed and suggested 8–13 interventions per patient. See Table 1 for additional data.

Discussions with the patient and interventions were made in regard to the patient's own mattress ($n = 31$ times), selecting an alternating pressure air surface mattress that met the patient's needs ($n = 59$ times), planned repositioning in bed ($n = 51$ times), planned repositioning in chair ($n = 39$ times), use of support surfaces in bed ($n = 50$ times), use of support surfaces while sitting ($n = 47$),

TABLE 1 Pressure ulcer interventions.

Patient number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Number of measures per intervention
Intervention																	
Risk assessment using the Modified Norton Scale	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	16
Skin assessment	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	16
Pressure redistribution regarding the patient's own mattress	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	16
Offloading the heel							x					x		x			3
Cushion in wheelchair/chair as well as measuring pressure	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	16
Other aids to accomplish offloading			x		x			x	x	x			x	x	x		8
How to avoid moisture-associated skin damage			x	x	x	x	x	x	x	x	x	x	x				9
Initiation of offloading																	
Planned repositioning in bed			x	x	x	x		x	x	x		x	x			x	10
Planned repositioning and restrictions while sitting	x	x	x	x	x	x	x	x	x	x		x		x			10
Initiated physical activity																	
Individual training program	x	x		x	x	x	x	x	x	x		x			x	x	10
Initiated nutrition																	
Nutritional drink to facilitate ulcer healing	x			x	x	x	x	x	x	x			x	x	x	x	10
Information and conversations about the importance of offloading the pressure ulcer	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	14
Offloading the ulcer with family member/staff at home				x	x			x		x			x				5
Initiated contact with different professionals																	
Contact with physician	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	16
Contact with dietician			x		x	x	x	x	x	x		x		x	x	x	10
Contact with physiotherapist/occupational therapist in community services								x	x	x							2
Number of measures per patient	9	8	10	11	13	12	11	11	13	11	11	12	10	9	10	10	

nutritional needs ($n = 54$ times), nutritional drink to facilitate ulcer healing ($n = 54$ times), and individual training programs ($n = 19$ times). The PU interventions the team needed to reinforce the least were: measures to avoid moisture-associated skin damage ($n = 9$ times) and the need to offload the heels ($n = 3$ times).

3.3 | Patients' perceptions about quality of care

All 16 patients completely or mostly agreed that useful information regarding the need to change position and offload the ulcer while in a chair or bed was given. Fourteen patients (87.6%) perceived the information to be highly or very important to them. Furthermore, 14 patients (87.6%) completely or mostly agreed that the information about having a good mattress to prevent PUs was perceived as relevant. Thirteen patients (81.3%) said that it was highly or very important to them. Seven patients (43.8%) said that they agreed completely or mostly that they received useful information from the mobile team about preventive equipment in bed, and 13 patients considered the information about equipment to be highly or very important (81.3%). In regard to chair equipment, 6 patients (37.5%) completely or mostly agreed that they received useful information, and 13 patients (81.3%) considered it to be highly or very important to them. For more information, see Table 2.

3.4 | Patients' perceptions about quality of life with PUs

The results show that PUs had a negative impact on the lives of the study participants. Based on the 7 days before the evaluation of their experiences, the area of their lives that was affected most was their ability to perform activities in everyday life. For 44% ($n = 7$) of the participants, their PUs negatively impacted their everyday activities quite a lot to very much, and for 44% ($n = 7$), the PU limited their ability to engage in recreational activities. Due to their PUs, 30% ($n = 6$) of the participants experienced dependency on others for help quite a lot or very much. The participants also evaluated physical factors that had an impact on the previous 7 days. There was a feeling of frustration because the PU took so long to heal among 63% ($n = 10$). Two participants (13%) disclosed that the PU was painful. It was reported by 19% ($n = 3$) that the PU affected their sleep. For 18.8% ($n = 3$), the PU was also perceived to be very much of a financial burden. For more information, see Table 3.

4 | DISCUSSION

4.1 | Mobile team

The mobile team's role in this study was to increase the individual's knowledge regarding important factors relevant to the prevention of PUs so they would have better compliance with the prevention

regime. This study shows that the mobile team informed the participants about different PU interventions. The discussions with the participants included different and important areas concerning PU interventions, such as risk assessment, redistribution equipment, repositioning to avoid pressure, nutrition, and the need for physical activity.³ The most frequent interventions discussed were the need for support surfaces aiding pressure redistribution (e.g., beds, mattresses, mattress overlays, and cushions) as well as the need for repositioning in a way that reduces pressure. It was especially important to discuss those factors with the patients since most of them had the PU on their sacrum.³ Despite this, the mobile team had to bring up the same subject several times to achieve patient compliance with the regime. Bergquist-Beringer and Daley²³ concluded that the prevention of PUs in the home healthcare setting is unique and achieving compliance there is more complex than in the hospital and nursing home settings. Caregivers need significant communication skills and collaboration in their work to prevent PUs in the home healthcare setting.²³ According to other studies, patients refer to personal contact instead of written information,^{24,25} and they want nurses to view them as partners in the team²⁴⁻²⁶ with shared decision making powers.⁵ Research has also found that when patients and caregivers understand PU interventions, it empowers them so they can take ownership in their own care.^{24,25} It is the responsibility of each patient to perform preventive measures day and night for perhaps a long period of time. Successfully involving the individual in their own care is one of the most important factors regarding to PU prevention.²⁷ Up until now, there has been a gap in the research regarding factors that are important to gain good adherence to PU interventions, and as also discussed by Ledger et al.,⁵ it is a complex area with many factors to consider. Additional research is therefore important since ownership of care is central and patients need to assume their share of responsibility when they receive home healthcare.

4.2 | Patients' perceptions of the quality of the care having a deep PU and subsequent healing

Another aim of the present study was to describe the patients' perceptions of the quality of the care and their experiences of having a deep PU and the healing process involved. The patients in this study expressed that they had received information about different prevention interventions. Moreover, the results show that the patients' perceptions of their health-related quality of life had impacted them physically, mentally, and generally in their everyday lives. The main impact the PUs had on the participants' health was a feeling of frustration because it took so long for the PU to heal. The results of this study are in line with other studies, which have shown that PUs and chronic wounds negatively affect patients.²⁸⁻³¹ For example, when measuring quality of life, patients with PUs had significantly lower scores than patients without PUs.²⁸ The same poorer quality of life was found among patients with chronic wounds, with older patients rating their quality of life lower than younger patients.³¹ A

TABLE 2 The quality of care from the patient's perspective regarding experiences and the importance of the information, $n = 16$.

I have received useful information from the mobile PU team about:	This is what I experienced (perceived reality)				This is how important this is to me (subjective importance)					
	Completely agree	Mostly agree	Partly agree	Do not agree at all	Not applicable	Highly	Very	Fairly	Not very	Not applicable
<i>n</i> (%)										
...my health condition in relation to PUs	9 (56.3)	3 (18.8)	1 (6.3)	3 (18.8)	-	8 (50)	4 (25)	2 (12.5)	-	2 (12.5)
...how examinations would be carried out	12 (75)	1 (6.3)	3 (18.8)	-	-	6 (37.5)	9 (56.3)	1 (6.3)	-	-
...expected result of ulcer treatment	9 (56.3)	2 (12.5)	5 (31.3)	-	-	6 (37.5)	6 (37.5)	1 (6.3)	-	2 (12.5) ^a
...the importance of diet to ulcer healing	12 (75)	-	-	3 (18.8)	1 (6.3)	5 (31.3)	4 (25)	3 (18.8)	-	2 (12.5) ^b
...the importance of changing position in a chair or bed to take the load off the PUs	13 (81.3)	3 (18.8)	-	-	-	9 (56.3)	5 (31.3)	2 (12.5)	-	-
...the importance of good mattresses	11 (68.8)	3 (18.8)	-	2 (12.5)	-	9 (56.3)	4 (25)	1 (6.3)	-	2 (12.5)
...self-care	12 (75)	1 (6.3)	1 (6.3)	2 (12.5)	-	8 (50)	5 (31.3)	1 (6.3)	-	2 (12.5)
...continued treatment at home	13 (81.3)	1 (6.3)	2 (12.5)	-	-	12 (75)	3 (18.8)	1 (6.3)	-	-
...the ability to consult about decisions	9 (56.3)	2 (12.5)	1 (6.3)	3 (18.8)	1 (6.3)	9 (56.3)	5 (31.3)	-	-	2 (12.5)
...taking the load off PUs	7 (43.8)	2 (12.5)	2 (12.5)	2 (12.5)	3 (18.8)	9 (56.3)	4 (25)	1 (6.3)	1 (6.3)	1 (6.3)
...aids in bed to help take the load of the PUs	4 (25)	3 (18.8)	3 (18.8)	2 (12.5)	4 (25)	9 (56.3)	4 (25)	-	-	3 (18.8)
...aids in a chair to help take the load off the PUs	4 (25)	2 (12.5)	4 (25)	3 (18.8)	3 (18.8)	9 (56.3)	4 (25)	-	-	3 (18.8)

^aOne patient did not answer the question.

^bTwo patients did not answer the question.

TABLE 3 The patient's perspective regarding having a pressure ulcer, *n* = 16.

The past 7 days.....	Not at all	A little	Moderately	Quite a lot	Very much
<i>n</i> (%)					
Body					
...my wound hurt	11 (68.8)	1 (6.3)		1 (6.3)	3 (18.8)
...my wound had a bad smell	9 (56.3)	1 (6.3)	4 (25)	1 (6.3)	1 (6.3)
...the discharge from the wound has upset me	2 (12.5)	2 (12.5)	7 (43.8)	4 (25)	1 (6.3)
...the wound has affected my sleep	11 (68.8)	1 (6.3)	1 (6.3)	2 (12.5)	1 (6.3)
...the treatment of the wound has been a burden to me	6 (37.5)	5 (31.3)	1 (6.3)	1 (6.3)	3 (18.8)
Psyche					
...the wound has made me unhappy	6 (37.5)	5 (31.3)	3 (18.8)	1 (6.3)	1 (6.3)
...I have felt frustrated because the wound is taking so long to heal	1 (6.3)	3 (18.8)	2 (12.5)	5 (31.3)	5 (31.3)
...I am worried about my wound	5 (31.3)	5 (31.3)	5 (31.3)	1 (6.3)	
...I have been afraid of the wound getting worse or of getting new wounds ^a	5 (31.3)	7 (43.8)	1 (6.3)		
...I have been afraid of hitting the wound against something	9 (56.3)	6 (37.5)	1 (6.3)		
Everyday life					
...I have had trouble moving around because of the wound	11 (68.8)			4 (25)	1 (6.3)
...climbing stairs has been difficult because of the wound	11 (68.8)			1 (6.3)	4 (25)
...I have had trouble with everyday activities because of the wound	8 (50)	1 (6.3)		4 (25)	3 (18.8)
...the wound has limited my recreational activities	8 (50)		1 (6.3)	2 (12.5)	5 (31.3)
...the wound has forced me to limit my contact with other people	8 (50)	2 (12.5)		4 (25)	2 (12.5)
...I have felt dependent on help from others because of the wound	6 (37.5)	3 (18.8)	1 (6.3)	1 (6.3)	5 (31.3)
Not categorized					
the wound has been a financial burden to me	11 (68.8)	2 (12.5)			3 (18.8)

^aThree patients did not answer the question.

review by Olsson et al.³⁰ found that health-related quality of life was lowest in the domain of physical pathologies. This was also described by Sebba Tosta de Souza et al.,²⁸ and was the case in this study. The evaluation of outcomes, such as patients' perceptions of quality of life, is important. Nurses need to discuss such factors with the patients and take them into consideration when care plans are established. If this is not done, nurses will be unaware of what matters most to the patients.

The results of the present study surprisingly showed that the participants, most of the time, preferred to visit the outpatient clinic instead of being visited by the mobile team in their homes. The participants chose home visits only 20 times. One reason for offering home visits, in the present study, was to spare the patients additional time sitting during travel and thus facilitate PU healing.³ Receiving home care was described by patients as a balance between obtaining care and preserving their own privacy and dignity.³² It is possible that the participants in this study felt a need to separate their private life from their care needs, even though this resulted in additional injurious pressure incurred during travel. One could question if, on an organizational level, nurse-led home care is effective. A review has shown

that nursing-led wound care comes in three varieties: home health nursing care, social community care, and nursing care at a wound clinic. The findings from a study by Dhar et al.,³³ demonstrated that nurse-led care is cost-effective, reports high levels of client satisfaction, and contributes to improved wound healing and reduced levels of pain. Another review concluded that nursing-led homecare visits might offer clinical benefits to important health dimensions as well as being cost-effective.³⁴ Coe et al.³⁵ stated that the effect that homecare visits have on patient well-being is unclear, regardless of whether the patient has informal caregivers or not.³⁵ The result highlights the importance to engage patients and families as partners when planning for new ways of working and organize the care.

4.3 | Method discussion

A main strength of this study is that the staff members who cared for the patients at home and at the outpatient clinic were the same people. Thus, interventions could be tracked over time, and it was possible to see the healing progress over time. Another strength was

the use of validated tools to examine the patients' perceptions. It was valuable to examine the actions taken by the mobile team as well as how the patients perceived those actions. A limitation of this study could be the small sample size taken from only one outpatient clinic. There were not many individuals available to be included in the study, and eight patients did not consent because they believed that their PUs were not the main reason that they needed care. Due to the small sample size, the results should be considered suggestive rather than conclusive. Future studies with larger sample sizes are needed to provide additional understanding. Another limitation was that we did not evaluate the patients' care plans, their adherence to prevention regimes, and what causes the PU. It would also have been valuable to examine the mobile team's experiences of their work. It could have highlighted the mobile team's knowledge and experiences of working as a guest in the patients' homes.

5 | CONCLUSION

This study found that the outcome and the effectiveness of care depend on many things. The results highlighted the importance of healthcare to support the healing process for individuals with deep PU, as it has an impact on their everyday lives. It was shown that home healthcare is not always a way of caring supported by these participants, even if traveling to the outpatient clinic would mean that their PUs could be made worse by the additional amount of pressure incurred during travel. When organizing care with regard to patient safety for patients with deep PUs, it is important to consider the patient's perspective, well-being and to involve patients in their care plans. More research is needed to find out how to organize care to make it safe, person-centered, and effective. As well as to evaluate the patients' adherence to care plans and if socioeconomic factors influence the care when the patient have to be responsible themselves. New technics such as telemedicine consultation could be more effective to follow up PU prevention interventions. For that to be possible, we need to ask the patients what matters most to them.

AUTHOR CONTRIBUTIONS

Carina Bååth: Conceptualization; data curation; formal analysis; funding acquisition; methodology; project administration; resources; visualization; writing—original draft; writing—review and editing. **Annika Carlsson:** Conceptualization; writing—review and editing. **Bodil Wilde Larsson:** Conceptualization; writing—review and editing. **Eva Sving:** Conceptualization; data curation; formal analysis; visualization; writing—original draft; funding acquisition; investigation; methodology; writing—review and editing.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

TRANSPARENCY STATEMENT

The lead author Carina Bååth affirms that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

DATA AVAILABILITY STATEMENT

The data to support the findings of this study are available from the corresponding author upon reasonable request.

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REFERENCES

- Gorecki C, Brown JM, Nelson EA, et al. Impact of pressure ulcers on quality of life in older patients: a systematic review. *J Am Geriatr Soc.* 2009;57:1175-1183. doi:10.1111/j.1532-5415.2009.02307.x
- Gorecki C, Nixon J, Madill A, Firth J, Brown JM. What influences the impact of pressure ulcers on health-related quality of life? A qualitative patient-focused exploration of contributory factors. *J Tissue Viability.* 2012;21:3-12. doi:10.1016/j.jtv.2011.11.001
- National Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel and Pan Pacific Pressure Injury Alliance (EPUAP/NPIAP/PPPIA). In: Haesler E, ed. Prevention and treatment of pressure ulcers: Clinical practice guideline. Cambridge Media; 2019. Accessed December 2022. <https://www.epuap.org/>
- McGraw CA. Nurses' perceptions of the root causes of community-acquired pressure ulcers: application of the model for examining safety and quality concerns in home healthcare. *J Clin Nurs.* 2019;28(3-4):575-588. doi:10.1111/jocn.14652
- Ledger L, Worsley P, Hope J, Schoonhoven L. Patient involvement in pressure ulcer prevention and adherence to prevention strategies: an integrative review. *Int J Nurs Stud.* 2019;101:103449. doi:10.1016/j.ijnurstu.2019.103449
- Karahan A, Abbasoglu A, Isik S, et al. Factors affecting wound healing in individuals with pressure ulcers: a retrospective study. *Ostomy Wound Manage.* 2018;64(2):32-39.
- Arai K, Yamamoto K, Suzuki T, Mitsukawa N, Ishii I. Risk factors affecting pressure ulcer healing: impact of prescription medications. *Wound Repair Regen.* 2020;28(3):409-415. doi:10.1111/wrr.12791
- Bowers S, Franco E. Chronic wounds: evaluation and management. *Am Fam Physician.* 2020; 101(3):159-166.
- Kuhnke JL, Keast D, Rosenthal S, Evans RJ. Health professionals' perspectives on delivering patient-focused wound management: a qualitative study. *J Wound Care.* 2019;28(Suppl 7):S4-S13. doi:10.12968/jowc.2019.28.Sup7.S4
- Gethin G, Probst S, Stryja J, Christiansen N, Price P. Evidence for person-centred care in chronic wound care: a systematic review and recommendations for practice. *J Wound Care.* 2020;29(Suppl 9b): S1-S22. doi:10.12968/jowc.2020.29.Sup9b.S1

11. Teo CSM, Claire CA, Lopez V, Shorey S. Pressure injury prevention and management practices among nurses: a realist case study. *Int Wound J*. 2019;16(1):153-163. doi:10.1111/iwj.13006
12. Damiao J, Gentry T. A systematic review of the effectiveness of pressure relieving cushions in reducing pressure injury. *Assist Technol*. 2022;4:1-5. doi:10.1080/10400435.2021.2010148
13. Joyce P, Moore ZE, Christie J. Organisation of health services for preventing and treating pressure ulcers. *Cochrane Database Syst Rev*. 2018;2018(12):CD012132. doi:10.1002/14651858.CD012132.pub2
14. Soegaard K, Sollie M, Beeckman D, Biering-Sørensen F, Ahm-Sørensen J. Interventions, stakeholders, and organisation related to pressure ulcer prevention for individuals with spinal cord injuries in transition from hospital to home—a scoping review. *J Tissue Viability*. 2023;32(2):194-205. doi:10.1016/j.jtv.2023.02.005
15. National Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel and Pan Pacific Pressure Injury Alliance (EPUAP/NPIAP/PPPIA). Prevention and treatment of pressure ulcers: Clinical practice guideline. In: Haesler E, ed. Cambridge Media; 2014.
16. Ek AC, Unosson M, Bjurulf P. The modified Norton scale and the nutritional state. *Scand J Caring Sci*. 1989;3(4):183-187. doi:10.1111/j.1471-6712.1989.tb00290.x
17. Wilde B, Larsson G, Larsson M, Starrin B. Quality of care from the elderly person's perspective: subjective importance and perceived reality. *Aging (Milano)*. 1995;7(2):140-149. doi:10.1007/BF03324304
18. Beattie M, Murphy DJ, Atherton I, Lauder W. Instruments to measure patient experience of healthcare quality in hospitals: a systematic review. *Syst Rev*. 2015;4:97. doi:10.1186/s13643-015-0089-0
19. Grøndahl VA, Karlsson I, Hall-Lord ML, Appelgren J, Wilde-Larsson B. Quality of care from patients' perspective: impact of the combination of person-related and external objective care conditions. *J Clin Nurs*. 2011;20(17-18):2540-2551. doi:10.1111/j.1365-2702.2011.03810.x
20. Olsson C, Sandsdalen T, Wilde-Larsson B, Eriksson E, Rognsvåg M, Larsson M. Healthcare professionals' perceptions of palliative care quality in a combined acute oncology-palliative care unit: a cross-sectional study. *Nord J Nurs Res*. 2021;41(3):121-130. doi:10.1177/2057158521997389
21. Fagerdahl AM, Bergstrom G. Translation and validation of a wound-specific, quality-of-life instrument (The Wound-QoL) in a Swedish population. *Ostomy Wound Manage*. 2018;64(5):40-46.
22. von Stülpnagel CC, da Silva N, Augustin M, et al. Assessing the quality of life of people with chronic wounds by using the cross-culturally valid and revised Wound-QoL questionnaire. *Wound Repair Regen*. 2021;29(3):452-459.
23. Bergquist-Beringer S, Daley CM. Adapting pressure ulcer prevention for use in home health care. *J Wound Ostomy Continence Nurs*. 2011;38(2):145-154. doi:10.1097/WON.0b013e31820ad115
24. García-Sánchez FJ, Martínez-Vizcaíno V, Rodríguez-Martín B. Patients' and caregivers' conceptualisations of pressure ulcers and the process of decision-making in the context of home care. *Int J Environ Res Public Health*. 2019;16(15):2719. doi:10.3390/ijerph16152719
25. Roberts S, Wallis M, McInnes E, et al. Patients' perceptions of a pressure ulcer prevention care bundle in hospital: a qualitative descriptive study to guide evidence-based practice. *Worldviews Evid Based Nurs*. 2017;14(5):385-393. doi:10.1111/wvn.12226
26. Latimer S, Chaboyer W, Gillespie B. Patient participation in pressure injury prevention: giving patient's a voice. *Scand J Caring Sci*. 2014;28(4):648-656. doi:10.1111/scs.12088
27. World Health Organization. Patients for Patient Safety. 2023. <https://www.who.int/initiatives/patients-for-patient-safety>
28. Sebba Tosta de Souza DM, Veiga DF, Santos IDAO, Abila LEF, Juliano Y, Ferreira LM. Health-related quality of life in elderly patients with pressure ulcers in different care settings. *J Wound Ostomy Continence Nurs*. 2015;42(4):352-359. doi:10.1097/WON.000000000000142
29. Oladele HO, Fajemilehin RB, Oladele AO, Babalola EO. Health-related quality of life and wound care practices among patients with chronic wounds in a southwestern Nigerian community. *Wounds*. 2019;31(5):127-131.
30. Olsson M, Järbrink K, Divakar U, et al. The humanistic and economic burden of chronic wounds: a systematic review. *Wound Repair Regen*. 2019;27(1):114-125. doi:10.1111/wrr.12683
31. Vogt TN, Koller FJ, Santos PND, Lenhane BE, Guimarães PRB, Kalinke LP. Quality of life assessment in chronic wound patients using the Wound-QoL and FLQA-Wk instruments. *Invest Educ Enferm*. 2020;38(3):e11. doi:10.17533/udea.iee.v38n3e11
32. Holmberg M, Valmari G, Lundgren SM. Patients' experiences of homecare nursing: balancing the duality between obtaining care and to maintain dignity and self-determination. *Scand J Caring Sci*. 2012;26(4):705-712. doi:10.1111/j.1471-6712.2012.00983.x
33. Dhar A, Needham J, Gibb M, Coyne E. The outcomes and experience of people receiving community-based nurse-led wound care: a systematic review. *J Clin Nurs*. 2020;29(15-16):2820-2833. doi:10.1111/jocn.15278
34. Tappenden P, Campbell F, Rawdin A, Wong R, Kalita N. The clinical effectiveness and cost-effectiveness of home-based, nurse-led health promotion for older people: a systematic review. *Health Technol Assess (Rockv)*. 2012;16(20):1-72. doi:10.3310/hta16200
35. Coe NB, Konetzka RT, Berkowitz M, Blecker E, Van Houtven CH. The effects of home care provider mix on the care recipient: an international, systematic review of articles from 2000 to 2020. *Annu Rev Public Health*. 2021;42(4):483-503. doi:10.1146/annurev-publhealth-090419-102354

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