



Exploring the knowledge, attitudes and experiences regarding pressure ulcer prevention of the healthcare support workforce: a mixed methods study

Final report for The Burdett Trust for Nursing

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Contents

Acknowledgements.....	2
Aims.....	3
Background.....	3
Methods.....	4
Participants.....	5
Data collection.....	6
Quantitative data collection (Phase 1).....	6
Qualitative data collection (Phase 2).....	7
Validity and reliability.....	8
Ethical considerations.....	8
Quantitative data analysis.....	8
Qualitative data analysis.....	9
Results.....	9
Quantitative findings.....	9
Qualitative findings.....	17
Enablers of pressure ulcer care.....	17
Communication with patients and carers.....	17
Guidelines and procedures.....	18
The multidisciplinary team.....	18
The importance of training.....	19
Personal motivation.....	20
Barriers to pressure ulcer care.....	21
Knowledge and skills.....	21
Workforce and workload.....	23
Resources.....	24
Resisting care.....	24
Areas for improvement.....	25
Discussion.....	29
References.....	36

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Exploring the healthcare support workforce's knowledge, attitudes and experiences in preventing pressure ulcers: a mixed method study

Aims

The aim of this study is to explore the knowledge, attitudes and experiences of the healthcare support workforce in preventing pressure ulcers.

Background

Pressure Ulcers (PrUs) are a preventable complication of acute and chronic illness with its occurrence estimated at 4-10% patients admitted to hospitals in the UK. PrU is very common among older people and patients who suffer from chronic illness such as stroke, diabetes, dementia and spinal cord injury. Patients 65 years of age and older account for 72% of all patients hospitalized in the UK. In intensive care units, developing PrU increases a two to four-fold risk of death in older people. PrU has a significant psychological, economic and social impact on individuals and family. In addition to the impact on morbidity and mortality, the presence of PrUs also represents a significant cost burden for health and social care systems. According to the National Institute of Health and Care Excellence (NICE), in addition to the costs of standard care, the daily costs of treating a PrU are estimated to range from £43 to £374 in the UK. Resources required for treating a PrU include nursing time, dressings, antibiotics, diagnostic tests, and high-specification, pressure-redistributing devices. The total cost of treating PrUs has been estimated to be between £1.4 billion and £2.1 billion per year with the average cost to treat one Stage IV PrU estimated at £14,108 per episode in the general population.

Nurses and healthcare professionals are primarily accountable for preventing PrUs. The occurrence of PrU potentially attracts litigation threat and organisational and professional reputational damage, particularly for nursing professionals who represent the largest healthcare workforce traditionally enjoying the most sustained and closest contact to patients. While Healthcare

Assistants (HCAs) alone constitute approximately one third of the caring workforce in hospitals, and despite the recent introduction of Nursing Associates, research suggests that with the introduction of standard certificate of fundamental care, the 'Care Certificate', healthcare support workers now spend more time than nurses providing fundamental care, including skin care (Cavendish review 2016). Previous studies have shown inadequate knowledge of PrU prevention in registered nurses and recommended research into nurses' attitudes to PrU prevention, prompting recommendations for tailored training in PrU prevention (Ebi et al 2019). While healthcare support workers are an expanding group of key workers active across diverse healthcare settings, their experiences, knowledge and attitudes towards PrU prevention is unknown. Indeed, the Department of Health (DOH) has urged that if the NHS seeks to improve patient care, it should view healthcare assistants as a critical, strategic resource (DOH 2013). DOH highlighted the need to understand and improve healthcare support workers' knowledge and practice. Therefore, this study aimed to explore the knowledge, attitudes and experiences of healthcare support workers to establish where resources can be focused to optimise healthcare support workers' contribution to PrU prevention.

Methods

A sequential explanatory mixed method design was used in this study (Fig 1). Quantitative data collection was first completed followed by qualitative data collection. Data analysis focused first on the qualitative data and then the quantitative data.

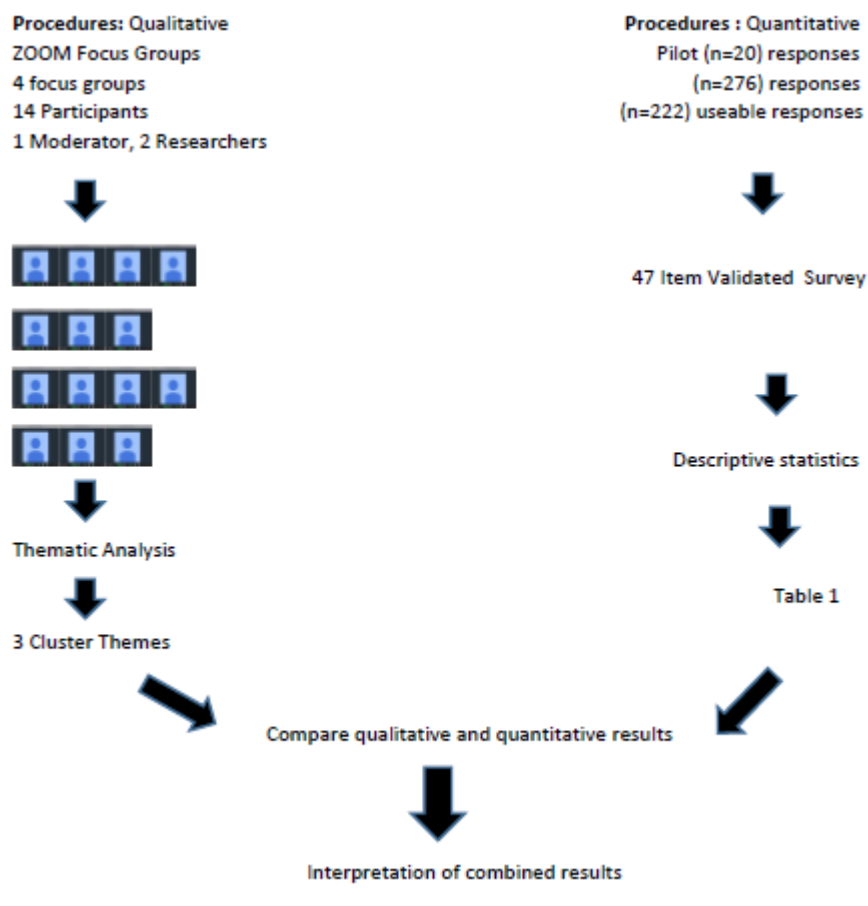


Figure 1 Sequential explanatory mixed method design

Participants

Participants in our study were members of the healthcare support workforce which was defined to encompass workers with the following job titles: Assistant Practitioner (AP), Health Care Assistant (HCAs), Health Care Support Worker (HCSW), Nursing Associate (NAs) and Trainee Nursing Associate (TNAs). The questionnaire was piloted with a group of participants (n=20) who were trainee Nursing Associates at Middlesex University. Multiple strategies were adopted to gain a large and diverse sample including advertisement of the study on social media via the RCN Nursing Support Workers Facebook group (N=810). We made contact with the Chair of the RCN Nursing Support Worker Committee who distributed our invitation to participate among the support worker membership (N=unknown). Finally we invited all students enrolled on Nursing Associate and Pre-Registration

Nursing programmes at Middlesex University (N=700) who currently work in support roles to complete the questionnaire. A subset of participants who completed the questionnaire expressed willingness to take part in the focus groups. In phase two, four focus groups with a total of 14 participants were conducted.

Data collection

Data was collected in the period from December 2020 to May 2021.

Quantitative data collection (Phase 1)

In phase 1, a questionnaire-based survey was conducted to examine knowledge, beliefs and attitudes in relation to PrUs prevention. The questionnaire design was informed by a review of the literature and consultation with experts in the field of tissue viability. We adapted both the Pressure Ulcer Knowledge Assessment Tool (Beeckman et al, 2010b) and Knowledge and Attitudes Toward Pressure Ulcer Prevention Tool (Beeckman et al, 2010a). We used Qualtrics software to distribute the questionnaire. The questionnaire comprised three parts, specifically a) socio-demographic domain, b) pressure ulcer prevention knowledge assessment domain and c) attitude toward pressure ulcer prevention domain.

Part one – seven socio-demographic questions

We asked participants' current role, clinical settings, and years of working in current place, any nursing or healthcare professional training undertaken, any pressure ulcer prevention training taken, age and gender. All closed questions also provided an opportunity to add additional free text responses.

Part two - 26 questions regarding Knowledge pressure ulcer prevention

The Pressure Ulcer Knowledge Assessment Tool includes 26 multiple choice questions with 3 answer options and reflects 6 domains expressing the most relevant aspects of pressure ulcer prevention: (1) aetiology and development; (2) classification and observation; (3) nutrition; (4) risk assessment; (5) reduction of the magnitude of pressure and shearing; and (6) reduction of the

duration of pressure and shearing. Correct answers are scored as '1', otherwise '0'. The maximum score on the knowledge instrument is therefore 26. A mean total knowledge score ≥ 15.6 out of 26 (60%) was considered to be satisfactory by its developers. The instrument was extensively validated in terms of item difficulty, discriminating index, and quality of the response alternatives (Beeckman et al. 2010b). The internal consistency (Cronbach's alpha) was reported as 0.77 and the 1-week test-retest intraclass correlation coefficient (stability) was 0.88 (Beeckman et al. 2010b).

Part three - Attitude toward Pressure Ulcer prevention

The validated Attitude toward Pressure Ulcer tool includes 13 items and reflects five subscale domains: (1) personal competency to prevent pressure ulcers, (2) priority of pressure ulcer prevention, (3) impact of pressure ulcers, (4) responsibility in pressure ulcer prevention, and (5) confidence in the effectiveness of prevention. A 4-point Likert-type scale is used to collect the data (1=strongly disagree, 2=disagree, 3=agree, 4=strongly agree). Sum scores were calculated to obtain the total attitude score. Scores on the negatively worded items were reversed to obtain a total score. The maximum score of the attitude instrument was 52. Higher scores indicate more positive attitudes. A mean total attitude score ≥ 39 out of 52 (75%) was considered to be satisfactory. Previous validation research indicated that the Content Validity Index of the items in the APuP was between 0.87 and 1.00 and Cronbach's alphas ranged from 0.76 to 0.81. The instrument as well as each of the five domain subscales, can be considered a brief, conceptually sound, rigorously developed instrument with strong evidence supporting the psychometric properties (Beeckman et al. 2010a).

Qualitative data collection

Focus groups were conducted virtually using Zoom software technology. All focus groups were audio-visually recorded. Three researchers were present at each focus group. Two researchers made notes while the third researcher introduced questions based on a topic guide. The topics addressed were the Healthcare Support Workforce's knowledge, attitudes and experience about pressure ulcer prevention.

Validity and reliability

The questionnaire used had established validity and reliability (Beeckman et al. 2010a &b). Focus group discussions were captured using superior quality computer devices in quiet locations and these contributions were transcribed by an experienced audio-typist. A process of 'inter-rater' reliability regarding coding of the qualitative data was achieved with agreement between two researchers. Where consensus was not achieved the third researcher was consulted.

Ethical considerations

Participant consent was assumed by completion of the online questionnaires. All participants were provided with a participant information sheet and were assured of voluntary consent prior to the focus groups. All participants signed a consent form to participate in these groups. The group members agreed to maintain confidentiality regarding the discussions. No identifying details were included in the transcription of this data.

Quantitative data analysis

The survey data were exported via online survey platform Qualtrics into Excel format. The data cleaning was carried out for consistency and accuracy. All data were transferred into SPSS (IBM Corporation, Armonk, NY) for coding and computing scores. Descriptive and inferential analysis was performed. All data were examined for normality using a Kolmogorov-Smirnov test. The independent sample t test and ANOVA were used to compare the scores of independent groups for normally distributed data. The Mann-Whitney U and Kruskal-Wallis H tests were used to compare the scores of independent groups for non-normal distributed data. The statistical significance was set at p-value < 0.05. Pearson correlations (r) were used to evaluate the correlations between score of Attitude towards PrU prevention and knowledge in PrU prevention and each categories. Significance level was <0.05.

Qualitative data analysis

Data from focus groups was recorded and transcribed verbatim. Qualitative data analysis was conducted over a two month period and was managed using Excel software. The approach was guided by a 5 step thematic analysis (Ritchie & Spenser, 1994).

Results

Quantitative findings

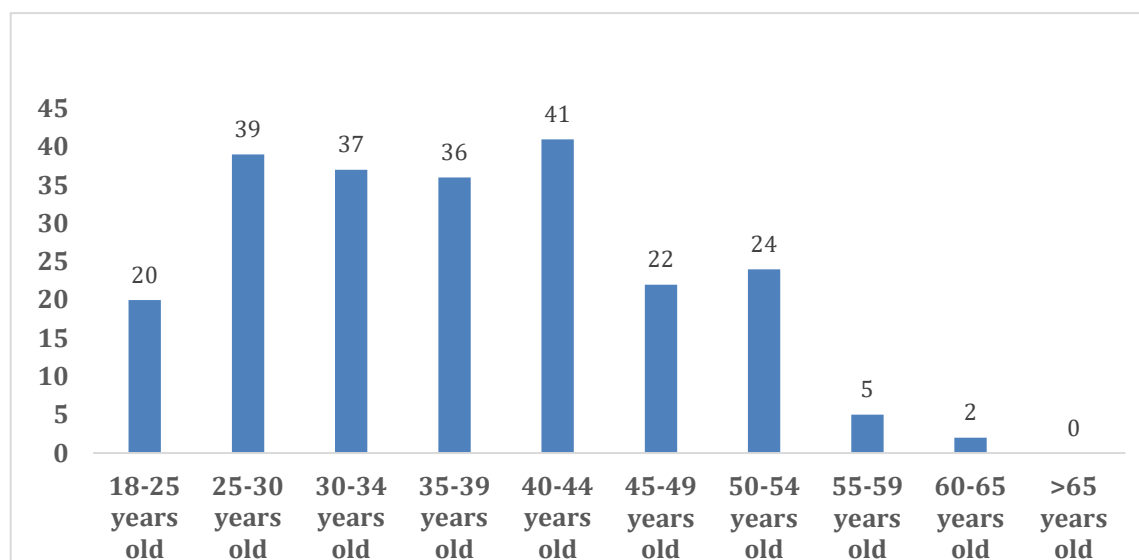
Sociodemographic characteristics of participants.

A total of 277 Healthcare support workers logged into our survey platform between December 2020 to August 2021; of these, 226 completed the survey, Most of them were female (163/226, 72.1%). Two thirds (153, 67.7%) of participants were aged 25-44 years old, and 152 participants (67.3%) had received some training or education in nursing or healthcare related professions. More participants worked in acute hospital ward than any other settings. One hundred forty eight (148, 65.5%) of the participants attended some form of education on PrU, mainly short informal in house training, Webinars and lecture or working alongside Tissue Viability Nurses at work (Table 1).

Table 1 Socio-demographic characteristics of 226 participants

		Frequency	Percent
Roles			
	Assistant Practitioner	21	9.3
	Health Care Assistant	60	26.5
	Health Care Support Worker	25	11.1
	Nursing Associate	13	5.8
	Other (please specify below)	21	9.3
	Trainee Nursing Associate	86	38.1
	Total	226	100.0
Nursing training			
	NO	74	32.7
	YES (Please specify below)	152	67.3
	Total	226	100.0
Gender			
	Female	163	72.1
	Male	62	27.4
	Prefer not to say	1	0.4
	Total	226	100.0

Figure 2 Age group of respondents



Knowledge of prevention of pressure ulcers

Mean scores of all 164 participants who answered the PrU questions

Analysis of knowledge items showed that the mean score of knowledge about pressure ulcer prevention was 10.9 ± 3.57 out of highest score of 26. Mean item score of knowledge was 0.42 ± 0.14 . Among the six categories of PrU prevention knowledge, the nutrition category had the highest mean item score of 0.66, preventive measures to reduce the duration of pressure of 0.45 and PrU classification 0.44, while aetiology of PrU had the lowest mean item score of 0.37. (Table 2).

Table 2. Mean scores of all 164 participants who answered the PrU questions

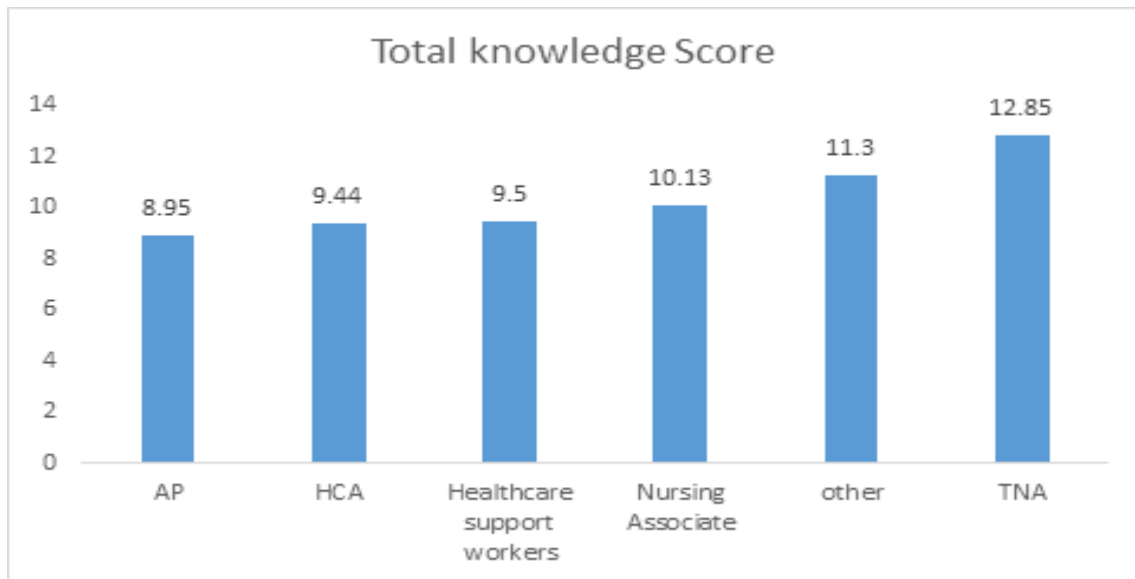
	Numbers	Max.	Mean	Standard deviation	Mean item	Standard deviation
Cause score	164	6	2.24	1.34	0.37	0.22
Class core	164	5	2.18	1.22	0.44	0.24

Risk score	164	2	0.77	0.73	0.39	0.37
Nutrition score	164	1	0.66	0.47	0.66	0.47
Prevent PrU Amount score	164	7	2.8	1.23	0.40	0.18
Prevent PrU Duration score	164	5	2.23	1.35	0.45	0.27
Total knowledge score	164	20	10.9	3.57	0.42	0.14
Total Attitude score	160	50	39.26	5.249	0.76	0.1

Scores among different roles

Knowledge scores regarding PrU prevention were higher among those who have taken nursing or healthcare related professional training ($P = .003$). Among job roles, Trainee Nursing Associates scored highest in PrU prevention knowledge (mean item score of 0.47, 12.85 out of 26) in comparison to any other groups, followed by those participants who stated as 'other' mainly nursing students scored second highest (mean item score of 0.43, 11.3 out of 26). Assistant practitioners scored lowest in this study (mean item score of 0.34, 8.95 out of 26). **(Figure 3)**.

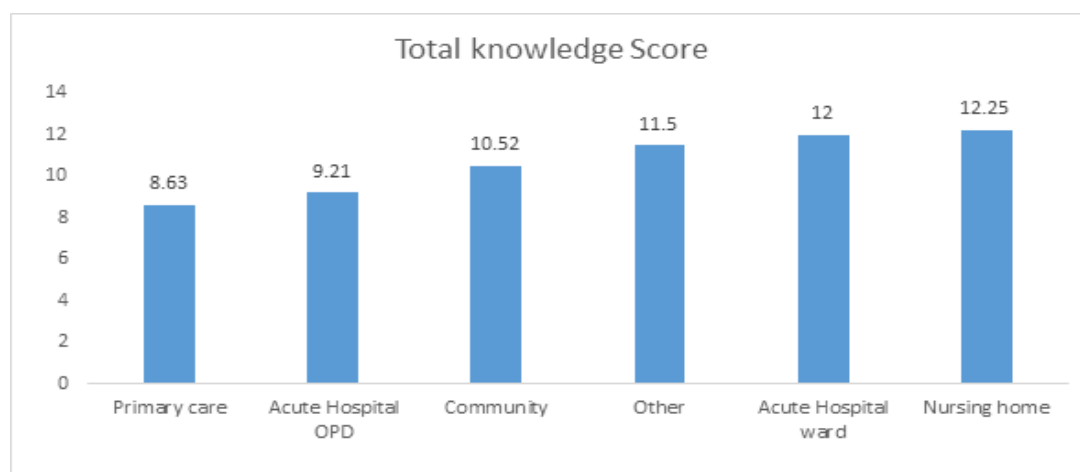
Figure 3 Knowledge of PrU prevention scores among different roles (page following)



Scores among different settings

No group of participants reached the recommended score of 15.6 out of 26 (mean item score of 0.60 or 60%) in our study. Participants who work in nursing homes and acute hospital wards scored highest in knowledge (mean item score of 0.47, 12, 3 out of highest score of 26; mean item score of 0.46, 12 out of highest score of 26 respectively). Participants who work in primary care and acute hospital OPD scored lowest in knowledge with a mean item score of 0.33 (8.63 out of highest score of 26), 0.35 (9.21 out of highest score of 26) respectively (**Figure 4**).

Figure 4 Knowledge of PrU prevention scores among participants working in different settings



Nursing or healthcare professional training taken

Knowledge scores relating to PrU prevention were higher among those who have taken nursing or healthcare professional training (P = .003). However, participants who had any form of PrU training scored lower than those participants who didn't have training (p<0.0001).

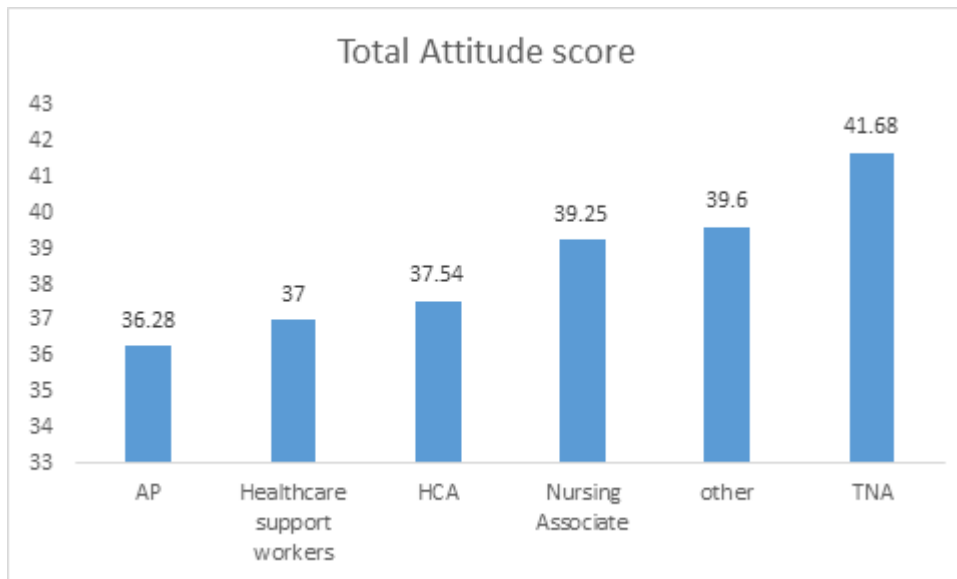
Attitude

The mean score regarding attitude towards PrU prevention was 39.2 out 52 (75.4%) among the participants as a whole.

Scores among different roles

The attitude towards PrU prevention score was higher among those who have taken nursing or healthcare related professional training (P = .003). Among job roles, Trainee Nursing Associates scored highest in Attitude towards PrU prevention with a mean item score of 0.80 (41.68 out of 52) in comparison to any other groups. This was followed by those participants who stated as 'other' mainly nursing students scored second highest with a mean item score of 0.76 (39.6 out of 52), which were greater than 0.75 (75%) as recommended as satisfactory. Assistant practitioners scored lowest in this study with a mean item score of 0.70 (70% 36.28 out of 52). **(Figure 5).**

Figure 5 Attitude towards PrU prevention scores among different roles

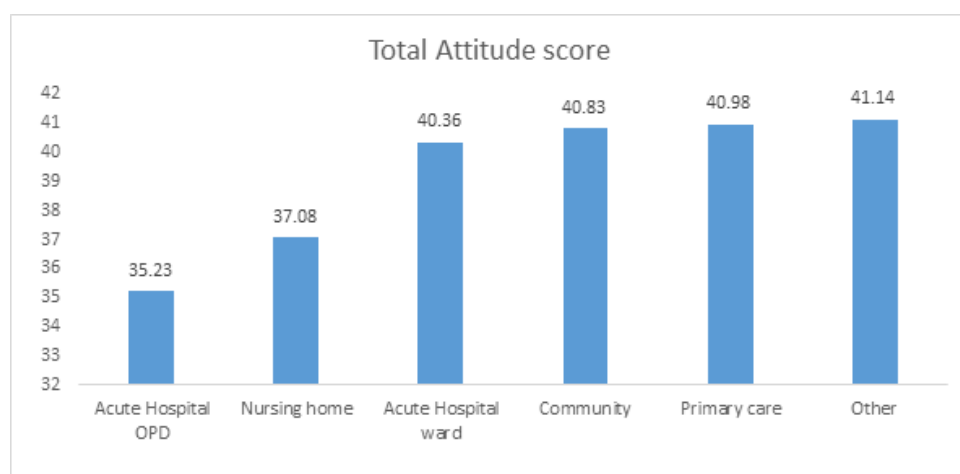


Scores among different settings

A number of participants worked in multiple clinical settings. In order to look at individual clinical settings, participants who work in one clinical setting were analysed. Participants who work in nursing homes and acute hospital OPD scored lowest in Attitude (37 out of highest score of 52, 36.28 out of highest score of 52 respectively), which were lower than recommended 75%. Participants who work in all other settings scored higher than 75%, with those participants who work in 'other' settings scored highest (41.14 out of 52).

(Figure 6)

Figure 6 Attitude towards PrU prevention scores among participants working in different settings



Correlation between Attitude and knowledge alongside each categories

As a whole, the score of attitude towards PrU prevention significantly correlated to higher total score of Knowledge in PrU prevention ($P < 0.005$) and most of sub category scores ($P < 0.005$) apart from classification category. **Table 3**

Table 3 correlations between score of Attitude and total score of Knowledge alongside each category.

Correlation to Total score of Attitude	Pearson Correlation	Sig. (2-tailed) P value
Total Knowledge score to total score of Attitude	.534**	0.000
Cause score to total score of Attitude	.223**	0.005
Classification score to total score of Attitude	0.079	0.322
Risk assessment score to total score of Attitude	.302**	0.000
Nutrition score to total score of Attitude	.508**	0.000
Prevent Amount score to total score of Attitude	.280**	0.000

of Attitude

Prevent Duration score to total score .524** 0.000

of Attitude

Qualitative findings

Informed by our study objectives we analysed data under three broad headings: enablers of pressure ulcer care, barriers to pressure ulcer care and areas suggested by participants for improvement in the delivery of such care.

Enablers of pressure ulcer care

Participants identified and discussed what they considered to be factors that enabled effective pressure area care. We grouped these under 13 topics. We present here the four topics that participants discussed most frequently: communication with patients and carers; guidelines and procedures; the multidisciplinary team; the importance of training. We also briefly mention a further theme to do with personal motivation.

Communication with patients and carers

For participants, communication with patients and carers comprised explanations, encouragement and health promotion. They recognised that effective care required skilled and clear explanations by nurses and health care assistants to patients about the need for pressure area care such as regular repositioning, liaising with the patient's carers where necessary and one participant mentioned the usefulness of Google Translate on a smartphone where needed. Clear explanations about procedures were also seen as facilitating understanding and participation in care. Some also believed that encouraging patients to be independent or to recover independence was important, sometimes combined with prompting to reposition themselves where possible. Participants also understood that factors such as smoking or diet could affect the ability for healing of pressure ulcers and emphasised their role in delivering health promotion on these topics as part of effective pressure area care.

A lot of it comes down to communication. And when you're speaking to a patient, how you're communicating to them, and whether or not they have an understanding of what's actually involved in what you're [saying]... It's about... actually speaking to them and developing like that kind of therapeutic relationship, even if they're only there for a day or two. And explaining why you need to, like treat, whether or not by moving them so they they're not laying on one side too long, but actually communicating with the patient and explaining to them why they need to be moved. (FG3 P5 Acute setting)

Guidelines and procedures

The existence of organisational guidelines and procedures was also seen as enabling effective care because these set out explicit actions to be taken at specific times e.g. on admission or at particular intervals regarding assessment of patients and management of pressure ulcers, sometimes linked to each level of pressure ulcer risk. It could be that such guidelines are of particular benefit to workers in support roles who do not have the extensive and in-depth clinical education and knowledge that Registered Nurses can generally draw upon in clinical decision-making:

I think you have to, when, patients are admitted into the ward, I think you have to be, you have to observe the protocols of like, check the patients from head to toe - not just looking for pressure ulcer - you have to check their heels, check their body, if there's any injury, or if there's anything that, you know, that you have to take notes. So, in terms of pressure ulcer, if there is [one], you have to notify the nurse or notify the senior nurse, so that, you know, they're aware. (FG2 Acute setting)

The multidisciplinary team

Participants saw the multidisciplinary team as a resource that enabled an appropriate response to different patient scenarios. For example, they saw Tissue Viability specialist nurses as important sources of information and

advice when patients did not respond to pressure area care being delivered by the ward team. One participant noted that deteriorations regarding pressure ulcers could be reported to medical staff. Another community-based HCA spoke about the advantage of the district nursing team sharing an office with physiotherapists and occupational therapists so that problems with particular patients could be discussed. Others made it clear that effective pressure ulcer prevention and care relies on teamwork and would not be possible without it. Some emphasised their reliance on qualified RNs for guidance regarding pressure area care while others emphasised the specific advantages that those in support roles experienced because of their closer and more sustained contact with and observation of patients. However, this entailed an understanding of the importance of reporting deteriorations to RNs:

P2: Yeah, I would agree with [my colleague], but also, as well, for us, it's about ensuring that that care is continued. You know, because it's all well and good giving it in the first instance, but when dressings need to be changed, the patient needs to be turned, the nurse has got something else to deal with, if we're there, in between that, doing what needs to be done, it ensures that it's continuous. That's where I think that it's important for us because then at least we are able to detect it deteriorating and if the care is suitable for the actual grade of the pressure ulcer. So you can report that back to the nurse as well.

Sophie, is anything you want to add to that?

P1: Yeah, because we, as HCAs, we're actually seeing more of the patient's body, more regular than actually nurses and doctors and everything. So that's why I was saying it's high on my [priority], skin assessment, because I know I'm seeing that patient more than other clinical staff. (FG 4 P 1 Community setting)

The importance of training

Participants were very clear about the importance of training about pressure ulcer risk assessment and care and appeared highly motivated to avail themselves of any training opportunity they could. Many were very aware of

their own lack of knowledge and also keen to contribute any knowledge gained from training and to be recognised for having a new level of capability.

How important do you think it is being trained to understand policies and procedures? And what kind of paperwork and checklists? How important do you think that is?

Very, very, very, important. And especially for us as Nursing Associates, like I said, we are the ones who is the in-between, and gets the information, you know, that the nurses cannot get or possibly can't get it in time, I think it would be really useful, because then we will get it and then we can pass it on to the nurse. Especially where as we have more of a personal contact with the patients. So yeah, definitely it would be wonderful for us and our role. That way our role would be seen as vital. (FG 4)

I had a lecture last week... It's telling you to what to look out; the guidance; the pressure points. It's just basics of everything to do with pressure ulcers, about the nutrition, about medication; about sleep... it's learning yourself on top now, and this is what I'm hoping to do in the next two weeks... So this these two weeks are very important to me.

Yeah. So I've decided I'm going to make this a real learning experience for me. And then hopefully, once I go back, it is to do with competencies and getting things signed off and following guidelines and policies. And hopefully when I go back to my team, they will have some [formal competence] that I can get signed off, and like I said, bring it back to our team. (FG 4 Community setting)

Personal motivation

Finally, many participants spoke of their personal motivation to contribute to alleviating patient suffering as part of their delivery of holistic care as a strong enabling factor.

...when you care for someone, you look at them not like your patient, but you look at them as your family, as your auntie, or your dad or your uncle or your mom. So you wouldn't want her skin to break, just because maybe you didn't reposition or just because the person is vulnerable. They're vulnerable and we are there to care for them. And the reason why we go to work every day is because of the patients. So we have to put them first no matter what. So when they come to our Ward, when we care for them, they are first. So it's just not medication; it encompasses everything: their nutrition, their well-being; their hygiene, there's everything. So yeah, we should really treat them as human being and value them. (FG2 P1 Acute setting)

Barriers to pressure ulcer care

Participants identified 11 topic themes relating to barriers to pressure ulcer care which we clustered under four main themes, specifically, 1) knowledge and skill 2) workload and workforce 3) resources and 4) resisting care.

Knowledge and skills

Participants raised the point that they were often the ones most likely to observe patient skin and to establish the presence of a pressure ulcer and escalate concerns as nurses were frequently occupied elsewhere. However, participants observed a lack of knowledge and skill in pressure ulcer assessment which created uncertainty around the important work of dressing choice.

Sometimes I would be the first person who has the contact with the patient before the actual nurse. So I would have to basically relay and say to the nurse, well, there's no pressure ulcers; that, you know, the patient hasn't come in with pressure ulcers. (FG 4 P2 Community)

The problem we have is for proper assessment; proper assessment, pressure ulcer assessment. Because within the assessment, we are able to determine the right dressing for that pressure ulcer. So if the pressure ulcer assessment is not done properly, you be like using the

wrong dressing for the wound, and then you're causing more problems. So to me, I think proper assessment is one of the key that is affecting people. (FG1 P2 Community)

Healthcare assistants reported a lack of skill and confidence particularly in assessing dark skinned patients

...one of my challenges was like, you know, the skin type? Sometimes it's difficult to observe, like dark skins, especially when it comes to DTIs; it's very difficult to see through some of the skin types. So that's one of the difficulties I have come across. Because I know a couple of patients had DTI, but not noticed because of the skin colour. If the skin is light, you can easily see that, but some of the pressure damages, especially in the heels and if the skin is dark, you can't sometimes recognise it. So that's one of the challenges I have noticed during pressure ulcers. (FG1 P1 Acute setting)

Participants observed the uncertainty and skill around the categorisation of pressure ulcers as problematic for continuity of care.

'Because it's very important to categorise, so that when you're giving a hand-over to your colleagues, sometimes even as I noticed to my ward, sometimes some of the Registered Nurse, they say that is Category One, and then sometimes when they say 'oh, it's not, it's38 they said, but actually, they are not sure as well to categorise the wound for the patient. (FG1 P5 Acute setting)

Some participants drew attention to inconsistent practice as barriers to good pressure ulcer care. Lapses in consistencies in standards of care were related to access to updates in knowledge and skill and access to retraining.

It (training) was good, but it's just one day, so it's always good to, because it's good to be retraining people because, you know, people who've been there for a while, they have a culture, a way they work. So

when you're new and you've got the fresh training, changing the culture or the habit of people, sometimes it's, it's a challenge, but we're supposed to be challenging bad habits, because sometimes you see people sliding patients - maybe they, I don't know why they do it with the sheet, which is, I always tell them 'no, we have to get the sliding sheet to slide patient. (FG2 P2 Acute setting)

Workforce and workload

Participants highlighted limited workforce supply as barrier to attending to the fundamental aspects of pressure ulcer care such as repositioning and being released to attend training.

Sometimes like short staff. Because you will not have time; like, for example, if the patient needs repositioning, even though if they don't have it, but they are at high risk of getting, then if it's short staff, that will affect; also lack of training. Like if you don't know what you're doing, then that means you can't do nothing. So I think short staff and lack of training. (FG2 P3 Acute setting)

Participants raised the point that it was particularly difficult for casual staff to remain updated in knowledge and skill in relation to pressure ulcer care

But what I have seen that the HCA people who have been permanent staff in the hospital, I think they are having more training sessions for the specific area that they need, and the hospital, they are funding some extra training for them. So that's different thing. And, as you said that for temporary staff, because they are going in different places. So they are not working in one place; therefore, they have less opportunity to do the training properly. That's the other thing. (FG4 P2 Acute setting)

Participants identified that inconsistencies in practice were often a product of excessive workload demands. Participants also highlighted the need for an

available workforce to work as a team in order to deliver good pressure ulcer care.

And another thing is, is like even, maybe because of workload on the people, when they have like 20 patients to visit26. That's time consuming task, makes them not to give the best to patients when they're performing that task. So, you see, I've seen when I was training, also, when a nurse, a band 5 nurse, will just go into the patient, take the whole dressing off, put the new one there, without actually assessing that stage of healing process. (FG1 P2 Community)

I think pressure ulcers is mainly a teamwork; you can't do it by yourself, especially when patients are in so much discomfort. And if there is not teamwork, I don't think I can manage a patient with a pressure ulcer on my own. (FG1 P3 Community)

Resources

Participants discussed the issue of limited resources and particular availability of dressings as a barrier to pressure ulcer care.

...it's actually having the dressings there to actually treat them as well. I mean, we had two patients and they didn't have dressings there to actually be treated today or changed. (FG4 P3 Community)

Along with this participants highlighted the delay in receiving referral appointments as a barrier to good pressure ulcer care

...it's getting the proper dressings; It's getting the appointments on a regular basis to actually look after them. Yeah, there is a bit of a change to happen. (FG4 PI Community)

Resisting care

Participants' experience suggested that a significant barrier to good pressure ulcer care was patients' resistance to pressure ulcer interventions.

I think it's combination of lot of things. I know of a patient – he refused during the night. He said he'd not got a sore and he'd got a really nasty one and he point blank refused any treatment at all and the doctors turned round and said that if he didn't let us dress and turn him, he could end up losing part of his top or his bottom. He ended up having an operation to debride it. And he had to sign to say he wasn't having any case. (FG3 P3 Acute setting)

According to participants significant factors in patients' resistance to pressure ulcer care was communication barriers'

And sometimes there's a language barrier as well. Some patients don't; understand medical terms; we have to put in layman's terms and if they don't speak good English, that's another barrier I've come across. (FG3 P3 Acute setting)

Areas for improvement

Under the main theme of areas for improvement we identified 4 further topic themes which participants raised as important points of discussion namely 1) training, 2) autonomy, 3) positioning and 4) TVN input.

Training

There was a very strong sense amongst the participants that training in pressure ulcer care was an area which required improvement. It was highlighted that existing training was uneven, infrequent and should instead be mandatory, regularly provided and extended to all those engaged in patient care to ensure a multidisciplinary approach. There were also calls for structured rather than opportunistic training provided by the TVN.

When I first started in London Hospital, I did a pressure ulcer training... 10 years ago (FG3 P1 Acute setting)

I think, first of all, to begin with, basic training for all staff should be included, like when we do training, the mandatory training for any Trust, any care home, or anywhere in surgeries, I think the pressure ulcer training should be included, ... I think at some point, everybody will need the training and because I think it's important. (FG1 P1 Acute setting)

Yeah. I was very disappointed actually. I don't know in my Trust, but I have only come across like 15 minutes when the TVN has come to the ward and say, 'Oh, I'm going to start the training, if you want to see how I do the dressing'. I don't think that's the relevant training. There should be proper training where we are shown different kinds of wounds and how to dress them. Because I have been to the patients where they say we use this dressing, we use this dressing, but, actually, I don't know why they are using this dressing. So I think there is a lack of training in the hospitals in the Trust, or I don't know, I'm not aware of any training to be honest.(FG1 P3 Acute setting)

Autonomy

Participants pointed in their discussions towards the practicalities of providing pressure ulcer care where nurses with authority to categorise and dress wounds are not always available. It was mooted that healthcare assistants would be ideally placed to intervene autonomously in a critically timely fashion if they had the necessary knowledge, training and skill

The thing is, knowing the grading is good - that's why I would like to keep updating my knowledge, but it's really the nurses who know how to grade and, from my experience, I cannot just go ahead and say something is a grade one, two, three or whatever. And I haven't had the training or been given the knowledge to be able to give a pressure ulcer, that kind of a grade,? So the grading is very important, very interesting to me and I'd like to get enough, the type of training that gives me the knowledge and therefore the authority to say, well, you

know, it's grade or could be a grade because of whatever. (FG4 P2 Community)

I think if they can put more effort into carers' training, because carers see more of the people. I'm talking, in terms of the community; they see more of the patients in the community that... So if they were well equipped on how to assess, it could be like proper ... assessment each time they are doing personal care, and they can easily raise a concern when they see something coming up, so it would be easy for them to intervene as soon as possible, so they prevent deterioration to the skin. So carers' training, I think, is very important. (FG1 P4 Community)

I think it's timing, you know, because, in both areas were both stretched. So meaning to say that, you can't always guarantee that every two hours or so, the patient can be turned. And that one thing. And I think the benefit would be, you know, just being able to know, when you see it, what to do in the interim, before the nurse has the time to come and see themselves as well, you know, who have the more advanced knowledge. So instead of, waiting for them to come and see it, at least you will be able to do something about it in the first instance.(FG4 P2 Community)

Positioning

Participants raised the issue of patient positioning as an area for improvement in pressure ulcer care. It was evident from the discussion that uncertainty existed about correct positioning where patients were still being turned at an extreme 90 degrees decubitus angle instead of the preferred 30 degree angle. It was also highlighted that an area for improvement was to encourage patients to self-position to enhance concordance and achieve a position of ease. There was areas for improvement highlighted in respect of regular repositioning in patients in community settings.

And then the pillow; we use a pillow to put the patient in an angle, position. 23.53 I used to always think it's on the side, to place the patient on the side like 90. So the patient will be like on this side while they, you know, youthe pillow on the on the back. So the patient will like be on our side or his side. (FG1 P1 Acute setting)

I go on the wardsand 'oh not that bloody thing again!'. 1.03.15 We're encouraging her to change her position so if you're uncomfortable when we come to turn you, you turn, you reposition yourself if you feel it's not enough, so that makes them feel better.(FG 3 P1 Acute setting)

Because if you're on the wards, you can position someone every two hours. If you're working out in the community, you can't every two hours to actually – yeah, you can get family members and that, but not everyone's got family members and that so it does, yeah, make it a little bit harder. (FG 4 P3 Community)

TVN input

A topic of discussion in regard to areas for improvement was the role and contribution of the TVN. There were calls for more TVNs to be instated and more presence in clinical areas and when present to conduct assessment and dressing with healthcare assistants. Referral waiting times to TVN need to be shorter and TVN nurses need to be involved before PU is established.

but the tissue viability nurses only comes when the patient has a pressure ulcer already. (FG2 P1 Acute setting)

Tissue viability nurses need to be more proactive – go on the ward, check what they do on the ward. (FG3 P3 Acute setting)

When it comes to tissue viability nurses, I know a hospital which only have two for the hospital, apparently. So maybe like they need more

instead of just them two that have the paperwork and all the patients to see and educating them. (FG3 P5 Acute setting)

Discussion

Previous studies have indicated a lack of knowledge and positive attitude towards pressure ulcer prevention among registered nurses and student nurses working in a range of countries. This is the first study to explore knowledge, attitudes, and experiences regarding preventing pressure ulcers among the healthcare support workforce in the UK. We used a mixed method design in this present study that provided a better understanding of the research problem than could be achieved by using one method.

The quantitative part of our study reported a lower mean knowledge score of 0.42 (42%), but a higher mean Attitude score of 0.79 (79%) among healthcare support workers. Our mean scores of knowledge in pressure ulcer prevention are lower than those reported from studies among assistant nurses in Sweden using same instruments, and also lower than studies among registered nurses and nursing students from other European countries. For instance, Gunningberg et al. reported a knowledge score of 0.55 (55.4%) for assistant nurses, 0.61(61.0%) for staff nurses, 0.59 (59.3%) for registered nurses in Sweden. Another study by Simonetti et al. who studied Italian nursing students among seven schools and reported knowledge scores 0.51 (51%) using the same cut-off point (60%) with Beeckman et al. However, the participants in our study showed a higher overall score in attitude (79%) than accepted as satisfactory (75%) by Beeckman.

Our scores regarding knowledge about PrU prevention are similar to the findings in the literature among registered nurses or student nurses from other non-European countries. For instance, Tirgari and colleagues conducted a study among 89 Iranian intensive critical care nurses and reported the mean score of pressure ulcer knowledge 0.44 using the same instrument. Similarly,

Ebi and colleagues carried out a cross sectional survey of 212 nurses who had at least one year experience in direct patients care, and reported a mean of nurses' knowledge across all themes and per item were 11.31 (SD = 5.97) and 0.43 (SD = 0.22) respectively. We found that participants who have taken nursing or healthcare professional training scored higher in Knowledge of PrU than those who have no training. Interestingly, the knowledge score is lower in participants who took any form of PrU training. This should be interpreted with caution. This is because the types of PrU training listed by participants in this study were ambiguous, most of them were informal or unstructured training, for example attending a webinar, working within the team, in-house induction, or work with a Tissue Viability Nurse.

Among job roles, the Trainee Nursing Associates generally scored highest in knowledge of 0.47 (12.85 out of 26) in comparison to participants in other roles in our sample. Assistant Practitioners and Healthcare support Workers scored lowest in knowledge with a mean score of 0.34 (8.95 out of 26) among Assistant practitioners, which is lowest in this study. In our study, the total score regarding Attitude towards PrU prevention significantly correlated with the total score of Knowledge in PrU prevention ($P < 0.005$) and most of sub category scores ($P < 0.005$) apart from the classification category. This finding is consistent with previous studies of nurses from other countries.

Our findings indicated that there is lack of knowledge of PrU prevention among healthcare support workers in the UK. The Trainee Nursing Associates seem to score highest among the healthcare support workforce. Participants who work in acute hospital wards generally scored higher in knowledge of PrU prevention than those in other settings. In contrast, participants who work in primary care and acute hospital outpatients department scored lowest. The findings highlight the importance of continuing structured PrU prevention education for nursing support workers across all clinical settings, particular primary care and acute hospital outpatients departments.

While diversity of participants and richness of responses was a clear strength in the use of the focus group method, we also acknowledge that potential for

moderator bias exists in this research approach. Nevertheless, from our qualitative exploration, we found that in common with Fletcher (2020) healthcare support workers reported that communication with and education of patients and carers is key in successful pressure ulcer prevention. In line with MECC, (2018), support workers in this study felt it important to help patients to change unhealthy behaviours as they believed it was essential to the practice of pressure ulcer prevention.

In this study, we observed support workers to be positively disposed in their attitude to pressure ulcer prevention. Motivation and enthusiasm to prevent pressure was very evident and was informed by a sense of duty and desire to provide a personal high standard of care to prevent patient suffering and harm. However what has clearly emerged is that ad hoc and informal training of support workers in knowledge and skill acquisition does not appear to be effective in achieving this standard in communicating effectively within teams and to patients. It is evident that support workers such as TNAs students or BSc nursing students who engage in formal university education demonstrate better knowledge and skill in relation to pressure ulcer prevention.

Self-reported knowledge and skill deficits in support workers and observed knowledge and skills deficits in registered nurses are highlighted in this study. These are mainly in relation to recognising improvement or deterioration in people with various skin colour and categorisations of pressure ulcer wounds. While prominent patient safety studies point to the association between degree prepared nurses and the prevention of patient harms (Aiken *et al*, 2003), in this study of support workers there was a strong sense that pressure ulcer prevention and associated negative outcomes would be further improved if regular and formal training and education was offered to support workers. At a minimum it would be helpful if pressure ulcer prevention training had a place amongst the repertoire of support worker mandatory skills training.

Clarkson *et al*'s (2016) findings suggest that while traditionally PU prevention has been generally regarded as a nursing concern, they suggest that both OT

and HCAs have more positive attitudes toward prevention strategies than nurses. There was also a strong sense of the need to make prevention of pressure ulcers 'everybody's business' across the multidisciplinary team in terms of assessment but most importantly practical assistance with activities which cannot be achieved as a lone worker such as repositioning. There was also need for review of support worker responsibility and autonomy regarding pressure ulcer prevention especially where support workers such as HCAs now engage in complex activities to fill gaps (NMC,2018), such as veno-puncture there is a case perhaps for support workers with appropriate training, ideally interprofessional training, to have more authority to institute pressure ulcer interventions independently and in a timely fashion such as pressure ulcer assessment and dressing choice.

Implications for practice and research

Nurses and healthcare professionals are primarily accountable for preventing PrUs. While healthcare support workers are an expanding group of key workers active across diverse healthcare settings, and most of them spend more time than nurses providing fundamental care, including skin care (Cavendish review 2016), their experiences, knowledge and attitudes towards PrU prevention is unclear. The Department of Health (DOH) has urged that if the NHS seeks to improve patient care, it should view healthcare assistants as a critical, strategic resources (DOH 2013). DOH highlighted the needs to understand and improve knowledge and practice among those nursing support workers. Lack of knowledge in pressure ulcer prevention among healthcare support workers reported in our study may form the basis for a future larger study such as national survey to confirm the national level of knowledge in pressure ulcer prevention among this group and to establish appropriate strategy to optimise their contribution to PrU prevention, ultimately reducing PrU incidence and decreasing the substantial personal and financial burden related to PrU

Possible future strategies to achieve benefit for both patients and healthcare support workers are summarised below.

Our findings show that participants who have university degree level input or structured training score higher in knowledge. The weakest areas in knowledge are aetiology; risk assessment and pressure relieving interventions. Such knowledge cannot normally be gained from a short training course, but needs some formative teaching and learning. However, nursing support workers are generally not university educated. While most participants are highly motivated, lack of education opportunities seems to be the key issue to tackle. We recommend

1) Universities should work with NHS and social care clinical partners to create learning opportunities and generate evidence-based material aimed at this section of the workforce.

2) The use of the UK NHS Trust network as the premier partner for future pressure ulcer research and clinical implementation.

3) The formation of an Academy to train and support this workforce in all aspects of pressure ulcer prevention and identify the resources for further education and training, to ensure continued leading nursing research in the UK.

4) The development and provision of a UK-specific, validated, healthcare support workers-orientated, tailored education program to inform NMC, RCN and NHS commissioning where appropriate.

Conclusion

We aimed to determine the level of knowledge and attitudes to the prevention of pressure Ulcers as a preliminary evidence contributing to future education strategies in pressure ulcers prevention among healthcare support workers, and also sought to compare results with other studies to draw implications for future research related to education and practice. The set aims of the study were completed. Our study indicated that there is a knowledge deficit among nursing support workers in the UK regarding prevention of PrU, although they showed highly positive attitude towards PrU prevention. A major educational campaign needs to be undertaken both in clinical settings and in nursing education among this workforce. Emphasis should be on understanding the aetiology of ulcers, risk assessment of PrU and addressing pressure-reducing interventions for patients at risk of developing PrU. Further research is

necessary to understand whether this knowledge deficit is present in a broad range of other members of the interdisciplinary team in the UK. Although this study focussed on nursing support staff, registered nurses, nursing students and multidisciplinary team approach that is focussed on preventing PUs is crucial to improving patient safety, it is important to include multidisciplinary team in the clinical practice working team, as well as in education and research.

Project Plan Review:

The aims of this research project were achieved. Some minor differences between the proposed methodology and the research programme occurred. Specifically, the focus groups were initially planned to run in a face to face format. Due to the pandemic, we were not able to conduct face to face focus groups and we revised to online focus groups. We found that online focus groups worked well for data collection.

Secondly, we initially planned to recruit Healthcare Assistants (HCAs) from our student cohort enrolled on our Trainee Nursing Associate (TNA) program. Again due to the pandemic, many of our potential participants were recalled to the frontline. We were concerned at the limited number of HCAs within our program. After liaising with program leaders and external collaborators such as clinical lead for nursing support workers from the Royal College of Nursing, we decide to expand our target population from HCAs along to the broader healthcare support workforce, including HCAs, TNAs, NAs, Assistant Practitioners. In fact, we found that expanding HCAs to Healthcare support worker allowed us to generate more meaningful data within current UK healthcare workforce.

Explanation of Expenditure:

Spending was basically in agreement with what was planned in the original project proposal. The only difference occurred was in the cost of travel, data collection via online entirely and multiple external platform recruitment. Co-ordination/administration of online survey and running focus groups. This was because pandemic situation. Our expenditure was balanced.

Further Research or Dissemination Activities:

It is expected that our completed work will lead to at least one journal publication. Possible projects of exploring knowledge, attitude and barriers/facilitators of pressure ulcer prevention among pre-registered nursing students and registered nurses, alongside other healthcare professionals in UK healthcare workforce, followed by investigating educational programs to improve outcome has been discussed. It is hoped that it can be funded in the near future.

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