

ORIGINAL RESEARCH: EMPIRICAL
RESEARCH - MIXED METHODS

The experience of staff utilizing data to evaluate and improve person-centred practice: An action research study

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Abstract

Aim: Explore how nurses and midwives use patient experience data collected from a mobile health app to influence the development of person-centred practice.

Design: Participatory action research, underpinned by the Person-Centred Nursing Framework and Practice Development principles.

Methods: Six clinical units in a large health district engaged in three action cycles from 2018 to 2020 using a mobile health app. Nursing/midwifery staff on the units ($N = 177$) utilized data collected via the app to evaluate and improve person-centred practice. A pre-post survey using the PCPI-S was conducted to evaluate staff perceptions of person-centredness. Data from the surveys ($n = 101$ in 2018 and $n = 102$ in 2020) and 17 semi-structured interviews were used to understand the influence working with these data had on person-centred practice. The Guidelines for Best Practices in the Reporting of Participatory Action Research have been used to report this study. **Results:** Improvements in person-centred practice were noted across both data sets. There was a statistically significant increase in two domains of the PCPI-S in the independent t-test and across all three domains in the paired t-test results. Thematic analysis resulted in the identification of six themes: Getting everyone on board, *once we understood*, keeping on track, *there's a person in the bed*, knowing you're doing a good job and improving over time.

Conclusion: Engaging with the data collected from the app in a facilitated and collaborative way results in increases in person-centredness.

Impact: This study provides insight into how nurses and midwives used data from a mHealth app to evaluate and improve person-centred practice. Utilizing the data generated by the app resulted in increased person-centredness amongst staff and changes to practice and culture. Nursing and midwifery teams who are supported to engage with patient experience data in an action-oriented way will see person-centred practice improvements, affecting patients and staff.

KEYWORDS

action research, data, key performance indicators, midwifery, midwives, mobile application, nurses, nursing, person-centredness

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1 | INTRODUCTION

Person-centredness has been increasingly recognized in research and healthcare policy for its positive influence on quality and safety outcomes for patients, staff and workplace cultures (Australian Commission on Safety and Quality in Health Care., 2018; Cardiff et al., 2020; Klancnik Gruden et al., 2021). On an international scale, the World Health Organization (WHO) (2015) has been calling for a shift in healthcare delivery for several years, where the person is placed at the centre of care, included in all aspects of care delivery and decision-making. Nurses and midwives play a pivotal role in delivering and enhancing person-centred care at a microsystem level. However, measuring their influence on the patient experience in relation to person-centredness has been underrepresented in research and practice (McCance, Lynch, et al., 2020; Phelan et al., 2020). Extensive amounts of data are routinely collected to measure the patient experience; however, a large proportion is quantitative and of negative or technical foci, for example, pressure injuries, falls, medication errors (Gray et al., 2021; Sim et al., 2018). Whilst these data provide information regarding technical nursing skills and shortcomings related to patient care, it fails to capture the person-centred aspect of nursing/midwifery care experienced by patients. It also does not provide insight into the influence engaging with these data has on nursing practice.

2 | BACKGROUND

A number of tools have been developed to measure nursing practice, but very few capture the contribution of nursing in relation to the patient experience and person-centredness (Gray et al., 2021; Wilson et al., 2021). One response to this identified gap was the development of eight person-centred nursing key performance indicators (KPIs) (see Table 1) by McCance et al. (2012). These KPIs and accompanying measurement framework were developed and tested internationally across a range of specialities (Lynch & McCance, 2022; McCance et al., 2012, 2015, 2016, 2020; McCance, Dickson, et al., 2020; McCance, Lynch, et al., 2020; Wilson et al., 2021). The measurement framework includes qualitative and quantitative data. It involves four data collection methods including: patient/carer surveys; an observational tool; review of patient records in conjunction with nurse interviews and patient/family stories. A paper-based system was initially used to capture the KPI data, prior to the development and feasibility testing of a mHealth app (McCance, Lynch, et al., 2020). In that study, the app called iMPAKT (implementing and Measuring Person-Centredness using an App for Knowledge Transfer) was installed on an iPad provided to each unit, and teams were supported to collect the data required (see Figure 1 for image of app login and home page). The data were collated into a report by the app. Teams used the results in combination with other available data to evaluate and improve person-centred practice in their unit. The results of these implementation studies confirmed the capacity of the KPIs to measure

TABLE 1 Person-centred nursing KPIs developed by McCance et al. (2012)

KPI 1	Consistent development of nursing care against identified need
KPI 2	Patient's confidence in the knowledge and skills of the nurse
KPI 3	Patient's sense of safety whilst under the care of the nurse
KPI 4	Patient involvement in decisions made about his/her nursing care
KPI 5	Time spent by nurses with the patient
KPI 6	Respect from the nurse for patient's preference and choice
KPI 7	Nurses support for patients to care for themselves where appropriate
KPI 8	Nurse's understanding of what is important to the patient and their family

the contribution of nursing, generating data that were different from traditional metrics utilized in practice and the effectiveness of the app. They also demonstrated that these data can be used not only to evaluate nursing practice, but inform person-centred change (Radbron et al., 2021; Wilson et al., 2021).

Technological advances have significantly enhanced the capacity of nurses to collect and access healthcare data, however data alone do not result in changes in practice (Dryden-Palmer et al., 2020). It is the nature of the evidence and utilization of knowledge (data) in practice that leads to change (Hunter et al., 2020). Whilst the value of KPIs in evidencing the contribution of nurses has been demonstrated, there is limited literature available focusing on how nurses and midwives utilize data collected through KPIs to inform person-centred practice change (Gray et al., 2021) and the influence this has on them as individuals. The research study reported in this paper sought to address this gap by exploring how nurses and midwives engage with patient experience data collected via a mobile health (mHealth) app and the influence this has on the development of person-centred practice. To enhance understanding and readability, the remainder of the paper will refer to the participants in the study as nurses or staff. This study also sought to understand how staff used the data from the app to inform quality and safety improvements. Findings relating to the KPI data and the specific practice changes that were implemented have been reported in Radbron et al. (2021).

This study was underpinned by the Person-Centred Nursing Framework (PCNF) (McCormack & McCance, 2021) (see Figure 2). The PCNF is an accepted theoretical framework and conceptual model for nursing. Its use enables the operationalization and evaluation of person-centredness in research and practice. It has been empirically tested and widely used to shape *the being and doing of person-centred nursing research* (Dewing et al., 2021a pg v). It also underpins the KPIs developed by McCance et al. (2012). The PCNF is made up of four domains: 'Nursing prerequisites' which focusses on the attributes of the nurse; *The care environment* focussing on

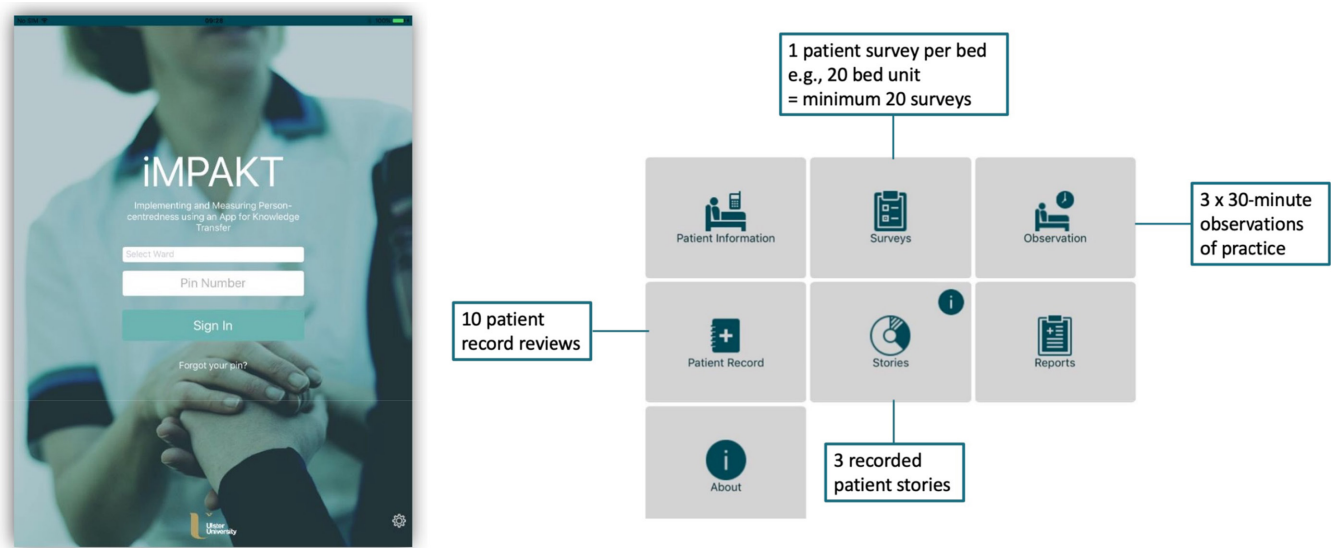


FIGURE 1 Screenshots of iMPAKT app login and home page with minimum data set.

the healthcare context; *Person-centred nursing processes* which focuses on the approaches required to deliver person-centred care; and *Person-centred nursing outcomes* which are summarized as a *good care experience* and occur as a result of person-centred nursing (McCormack & McCance, 2021).

As this study sought to understand how working with the data from the KPIs influenced person-centred practice, it was important to define person-centredness as there are varying descriptions used in healthcare and research. The definition used in this study is from McCormack and McCance (2017). It was chosen as it is holistic in its approach acknowledging all persons involved in the healthcare experience (patients, families and staff) and aligns closely with the chosen theoretical framework, the PCNF (McCormack & McCance, 2021).

Person-centredness is an approach to practice established through the formation and fostering of healthful relationships between all care providers, service users and others significant to them in their lives. It is underpinned by values of respect for persons (personhood), individual right to self-determination, mutual respect and understanding. It is enabled by cultures of empowerment that foster continuous approaches to practice development. (McCormack & McCance, 2017, p. 3).

There has been significant growth in person-centred healthcare research and practice development over the past two decades (Cardiff et al., 2020). However, as nursing practice is ever evolving, there remains a need for the continual development of knowledge in relation to 'what' person-centred research is and 'how' to undertake it effectively (Dewing et al., 2021b). Consequently, it is essential to understand 'how' nurses are collecting and utilizing evidence collected in practice via technology such as mHealth apps to evaluate and enhance person-centred practice.

3 | THE STUDY

The aim of this participatory action research study was to explore how nurses and midwives use patient experience data from person-centred KPIs collected by a mHealth app and the influence this has on the development of person-centred practice. To achieve this aim, the study had two research questions:

1. How do nurses and midwives engage with data collected from mobile health apps to inform person-centred practice change?
2. Does working with this kind of data influence person-centred practice?

3.1 | Design

Participatory action research was deemed the most appropriate methodology to answer the research questions, as it seeks to work 'with' staff to explore and develop practice in cycles, rather than perform research 'on' or 'about' them (Bradbury, 2015). This approach enables the connection between care providers, service users and researchers which is strongly aligned with the definition of person-centredness and the study's underpinning theoretical framework the PCNF (McCormack & McCance, 2021). The study was also informed by Practice Development principles, including *respect for persons values and beliefs, use of collaborative, inclusive and participatory approaches and active work-based learning that maximises opportunities for autonomy, shared meaning making and facilitates the transformation of individual, practice, and workplace cultures* (Dewing et al., 2021b; Hardy et al., 2021). These principles are person centred in their orientation and were considered in all aspects of the study design. The Guidelines for Best Practices in the Reporting of Participatory Action Research (PAR) (Smith et al., 2010) were used to report the outcomes of this study (Appendix S1).

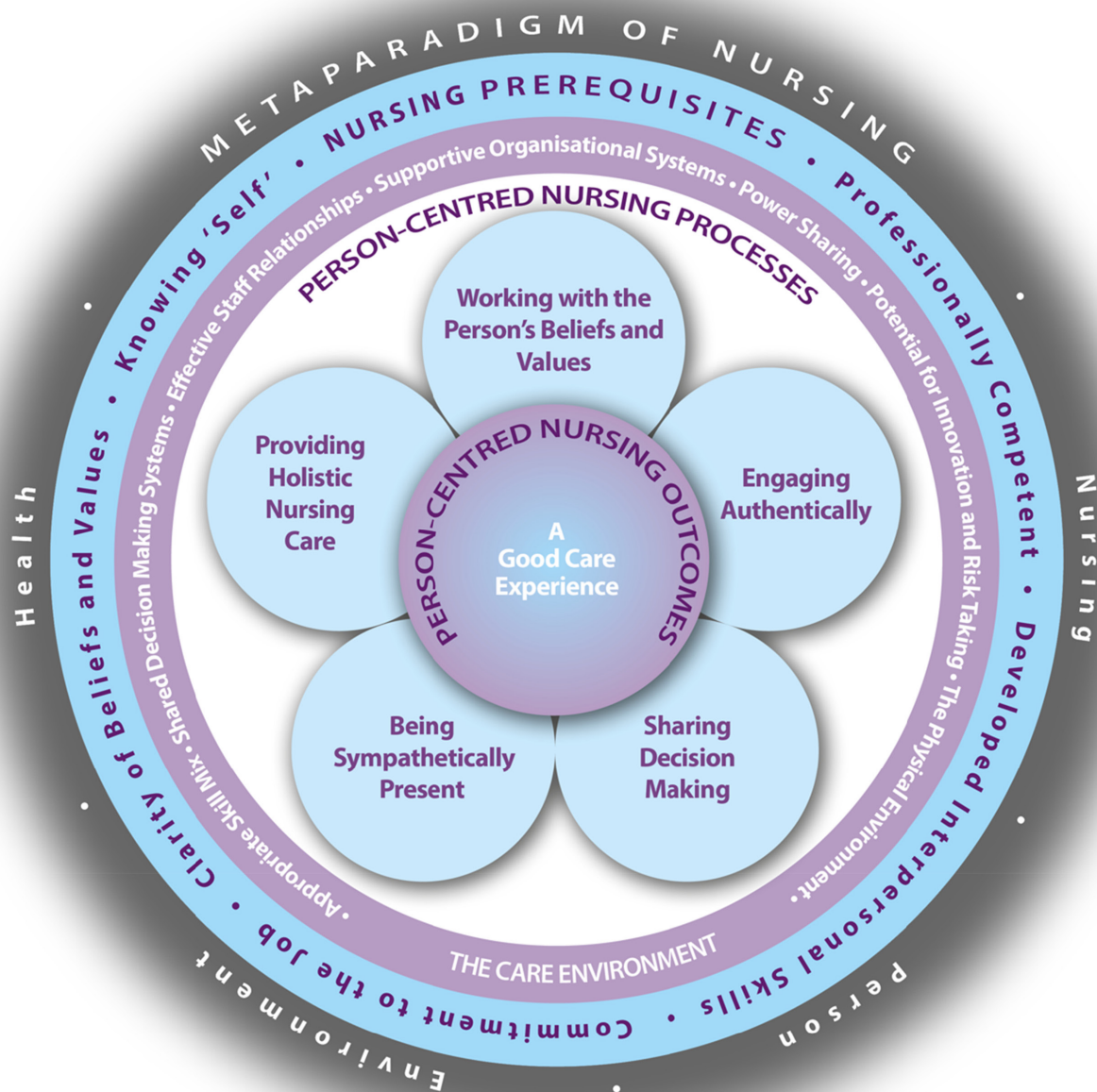


FIGURE 2 The Person-Centred Nursing Framework, (McCormack & McCance, 2021).

3.2 | Participants and setting

The study was a concurrent study using the app that was developed as part of the feasibility study reported by McCance, Lynch, et al. (2020). It took place in a large local health district in Australia from 2018 to 2020. Information regarding the study was provided to nursing/midwifery managers across the health district in a staff forum. Clinical units were encouraged to submit an expression of interest to participate in the study via email. Six clinical units located across three different hospitals within the health district agreed to participate in the study. The specialities of the units included acute medical, day surgery, medical short stay, head-neck

surgical, haematology/oncology and maternity. Within each clinical unit, a small action research group (ARG) of nursing staff was established to lead the study locally. These groups were assisted by authors (ER and VW) who supported each unit through three action cycles using the KPIs developed by McCance et al. (2012) via an app to evaluate person-centred practice. A total number of 177 nursing/midwifery staff worked in the units (83% nursing and 17% midwifery). Staff had no prior knowledge or experience using the KPIs or app. They were provided information about the study, KPIs and app in ARG meetings and staff in-services. All staff on the clinical units were given the opportunity to participate in the study by collecting data using the app, participating in staff forums

discussing and reflecting on the data in the reports generated, and completing the pre and post survey.

Participation in the study was voluntary and informed verbal and written consent were gained from staff. As the focus was to explore person-centred practice within the six participating clinical units, convenience sampling was the most appropriate strategy to utilize (Etikan et al., 2016). In addition, at the time of this study, there were no research studies published utilizing the PCPI-S (Slater et al., 2017) as a pre and post measure making the minimum sample size unknown.

3.3 | Data collection

A combination of quantitative and qualitative data was collected to answer the research aims (see Figure 3). This included a pre-post survey using the Person-centred Practice Inventory-Staff (PCPI-S) (Slater et al., 2017) and semi-structured interviews. Details of the data collection process using the app are outlined in Figures 1 and 3 and reported in detail by McCance, Lynch, et al. (2020) and Radbron et al. (2021).

3.4 | Measuring the influence on nurses/midwives' levels perceptions of person-centredness

The PCPI-S (Slater et al., 2017) was used to measure the influence engaging with the KPI data had on staff perceptions of person-centredness. The PCPI-S was chosen as it is a psychometrically sound tool for measuring perceptions of person-centredness which has undergone reliability and validity testing (McCance et al., 2021; Slater et al., 2017). It is made up of 59 questions measuring three domains: 'Prerequisites', 'Care Environment' and 'Care Processes'. The questions require respondents to select the most appropriate response along a five-point Likert scale from 'strongly disagree' (1) to 'strongly agree' (5). Data for the PCPI-S were collected by electronic survey tools. Prior to commencing the study in 2018, all staff working in the clinical units were invited to participate in the pre-survey via email. After cycle 3 was complete for all units in 2020, staff were provided with a survey link via email and QR code. Staff were asked to provide their unique staff identifiers (which were not known to researchers) to enable identification of any changes between 2018 and 2020 scores for staff who completed surveys at both time points.

Note. This paper reports on data components contained in the box below

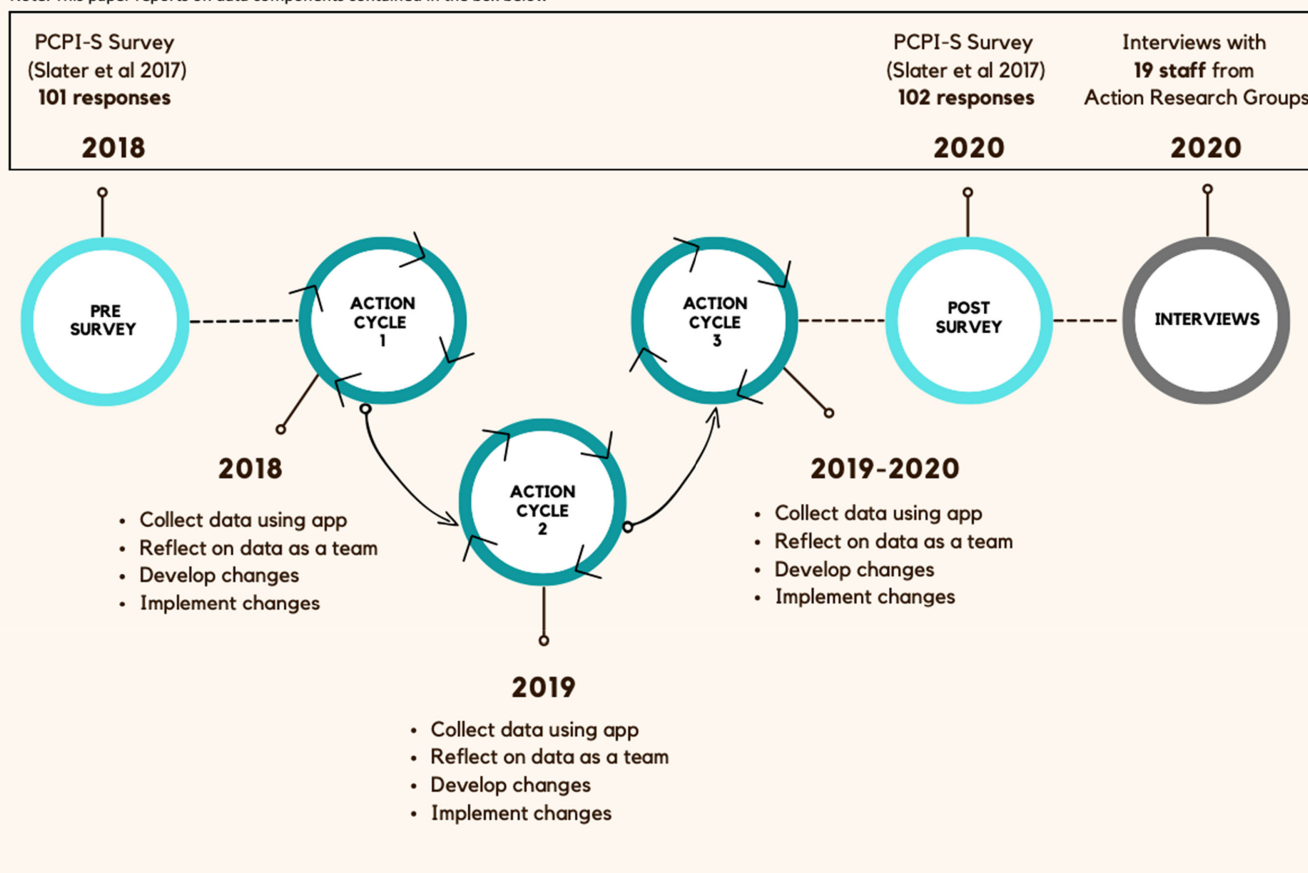


FIGURE 3 Overview of the study process and data collection methods.

To explore staff experience using the data generated through the iMPAKT app, qualitative data were collected through semi-structured interviews ($n = 17$) with members of the action research groups across the six clinical units. Nineteen of 22 of the staff involved in the action research groups participated in the interviews which were conducted both face to face and online, lasting between 10 and 40 min. The conversations were guided by an interview template (Appendix S2), audio recorded, transcribed verbatim and de-identified.

3.5 | Ethical considerations

Ethical approval for this study was obtained from the local university and hospital human research ethics committee. The study design and implementation were guided by ethical principles including voluntary participation with informed consent, ensuring anonymity and confidentiality for participants, recognizing potential for harm or distress in discussing and evaluating nursing/midwifery practice, appropriate strategies to manage and escalate concerns and communication of results to all participants.

3.6 | Data analysis

3.6.1 | Quantitative data

The PCPI-S data from both time points were exported into excel for cleaning. Individual reports presenting the descriptive statistics of the PCPI-S results were generated and presented to each clinical unit after the pre-survey in 2018. Individualized benchmarking reports comparing survey results from 2018 to 2020 were also provided to all participating clinical units at the end of cycle 3.

To ensure reliability, responses to survey questions were categorized into the three domains 'prerequisites', 'care environment' and 'care processes' as prescribed by the PCPI-S (Slater et al., 2017) and mean scores were calculated. After cleaning, quantitative data were input into SPSS version 27 and analysed with guidance from a statistician, co-author RM and developer of the PCPI-S, Dr Paul Slater. An independent t -test was conducted on all responses to explore differences between results from the 2018 and 2020 PCPI-S surveys across the six clinical units. To explore the results in greater depth, a paired t -test was conducted to explore differences between 30 matched participants who undertook the PCPI-S survey in 2018 and 2020. Statistical significance was set at $p = .05$ and Cohen's d was used to report effect sizes where 0.20 is small, 0.50 is medium and 0.80 is large (Cohen, 1988).

3.6.2 | Qualitative data

Qualitative data were analysed using Braun and Clarke's six phases of reflexive thematic analysis (Braun et al., 2019). Audio recordings

were transcribed verbatim, and notes recorded to ensure immersion and familiarization with the data. Transcripts were re-read and checked for accuracy by the lead author (ER). Initial codes and nodes were generated using NVivo 12 and discussed with other authors (TM, RM, VW). A thematic map was generated with potential themes and discussed by all authors. A substantial number of supporting quotes were collated and reviewed to ensure accuracy of interpretation before themes were reviewed, refined and agreed upon by all authors.

3.6.3 | Ensuring rigour

Lincoln and Guba's (1985) trustworthiness criteria of; credibility, transferability, dependability and confirmability were used to ensure rigour in the conduct and reporting of the study. Credibility was established through prolonged engagement with teams over three action cycles during a 2-year period where rapport and trust were developed with participants. Credibility was also established through the combination of quantitative data from the pre-post survey using validated tool, the PCPI-S survey (Slater et al., 2017) and qualitative data pertaining to staff experience. Transferability was achieved through intentional thick description of the study and the contexts in which it was undertaken. This will enable others considering replicating the study to make informed judgements about the degree to which it would be suitable for other settings. Transferability was also demonstrated by intentionally conducting the study with teams across different specialities in the hope that the study could be replicated in a variety of other clinical contexts. Dependability was demonstrated through the logical approach of the study utilizing the validated KPI measurement framework in combination with action research methodology and ensuring detailed audit trails were kept. Confirmability was achieved through the collaborative approach between the researchers and participants and provision of facilitated support for the collection and analysis of the findings. Reflective field notes were also kept and regular discussions between the research team were had to ensure consistency and neutrality was maintained throughout the study.

4 | FINDINGS

4.1 | Staff perceptions of person-centredness (PCPI-S results)

Across the six clinical units, 203 staff members participated in the PCPI-S survey, $n = 101$ in 2018 (57%) and $n = 102$ (59%) in 2020. Thirty staff members completed the PCPI-S survey in both time points. Increases in mean scores for all three domains of the PCPI-S from 2018 to 2020 were noted. Independent and paired t -tests were conducted to explore statistical significance between means of both the overall group and the matched pairs. The primary outcome measure was Domain 3 'Care processes' as six of the eight

person-centred KPIs (KPI 1, 4, 5, 6, 7, 8) are mapped to this domain of the PCNF, (McCormack & McCance, 2021). KPI 2 is mapped to Domain 1 'pre-requisites' and KPI 3 is mapped to person-centred outcomes (not measured by the PCPI-S).

An independent t-test was conducted to explore differences between results from the 2018 and 2020 PCPI-S survey across the six clinical units. An alpha level of 0.05 was used. Descriptive statistics are reported in Table 2. A statistically significant difference was evident between means from 2018 and 2020 for Domain 2, $t(29) 4.86$, $p \leq .001$ and Domain 3 $t(29) 2.79$, $p = .009$.

A medium to large effect size was noted in Domain 2, $d = 0.522$ and Domain 3, $d = 1.828$ indicating a considerable degree of practical significance.

4.2 | Paired t-test

A paired t-test was conducted to explore differences between staff members who undertook the PCPI-S survey in 2018 and 2020 ($n = 30$). An alpha level of 0.05 was used. Descriptive statistics are presented in Table 3. Statistically significant increases in mean scores were observed for each of the three domains of the PCPI-S. Domain 1, $t(29) -2.19$, $p = .037$, Domain 2, $t(29) -4.86$, $p \leq .001$ and Domain 3 $t(29) -2.79$, $p = .009$. A low to moderate effect size was noted (0.28–0.38) indicating a moderate degree of practical significance.

4.3 | Staff experience (qualitative interview findings)

Six main themes were developed from the thematic analysis of the qualitative data (Figure 4). They are presented in narrative form with de-identified (coded) participant quotes. Details of the participant code numbers, corresponding units and designations are found in Table 4.

4.4 | Getting everyone on board

Participants expressed the benefit of having a collaborative approach during all aspects of the study, and the positive influence this had on their experience and practice. They highlighted the value of having a range of staff (and in some units, students) working

TABLE 2 Descriptive statistics for PCPI-S independent t-test

PCPI-S domain	Year	N	Mean	SD
Domain 1 (pre-requisites)	2018	101	4.12	0.41
	2020	102	4.21	0.38
Domain 2 (care environment)	2018	101	3.67	0.51
	2020	102	3.93	0.49
Domain 3 (care processes)	2018	101	3.41	0.37
	2020	102	4.18	0.46

TABLE 3 Descriptive statistics for PCPI-S paired t-test

PCPI-S domain	Year	Mean	SD
Domain 1 (pre-requisites)	2018	4.10	0.39
	2020	4.25	0.34
Domain 2 (care environment)	2018	3.65	0.43
	2020	3.96	0.39
Domain 3 (care processes)	2018	4.06	0.40
	2020	4.20	0.41

together to collect, analyse and utilize the data. They explained that *if everybody comes on board, it makes it much easier* (P4). One participant described the benefit of their team's inclusive approach in the study as *demonstrating that it's not just the higher up people [management] that are doing everything. This is something that's important to everybody, and that's one of the things that iMPAKT allows you to do, is that you can get everyone involved* (P5).

Two units involved their administration staff in the data collection process. One participant explained their team *gave it [iPad with iMPAKT app installed] to the receptionist out the front and they were doing a little bit of surveying with it* (P18). Another unit involved students. They reported that *for students it gave them communication skills with the patient* (P11).

Participants also highlighted the influence of management on engagement, stating *If they're [management] proactive, I think staff members will get on board* (P7) and the importance of management *communicating our results back to the staff* (P15). All participants expressed the value of keeping staff *up to date with it [study progress]* (P6), and *making sure you feedback information to your staff and that they understand that information and how we've used that* (P13). These processes enabled *staff buy-in* (P15). Participants also highlighted that *getting everyone on board* was not just exclusive to staff and students, but that the study *involves the patients as well* (P19) which was a novel experience. Many expressed that because of their participation in the iMPAKT study, they now have a more inclusive approach to research and practice:

I have that understanding now of how to engage staff, how to engage and include patients, how to bring the team together and within it, it's that collaboration. ... it's not about you and the team, it's how we all work together. I think iMPAKT has really kind of shaped that for me. (P17).

4.5 | 'Once we understood'

Participants described engaging in the study as a positive experience, reporting *I think it's one of the best quality projects I've ever been a part of* (P17). However, it became apparent that their positive experience did not exist from the study outset. There was a clear correlation between positive participant experiences and levels of staff understanding. In the beginning, staff described feeling *a bit confused* (P1) and lacking enthusiasm, recalling *I just*

Qualitative themes

1. Getting everyone on board
2. 'Once we understood'
3. Keeping on track
4. 'There's a person in the bed'
5. Knowing you're doing a good job
6. Improving over time

FIGURE 4 Qualitative themes.

TABLE 4 Qualitative data participant code numbers and demographic information

Participant code numbers	Clinical unit	Designation
P1	A	Nurse unit manager
P2	B	Nurse unit manager
P3	C	Clinical nurse educator
P4		Nurse unit manager
P5		Acting nurse unit manager
P6		Clinical nurse specialist
P7		Clinical nurse educator
P8		Endorsed enrolled nurse
P9	D	Registered midwife
P10		Midwifery unit manager
P11		Clinical midwifery educator
P12	E	Nursing unit manager
P13		Acting clinical nurse educator/ registered nurse
P14		Clinical nurse specialist
P15		Acting nurse unit manager
P16		Registered nurse
P17		Clinical nurse educator/acting nurse unit manager
P18	F	Nurse unit manager
P19		Registered nurse/acting nurse unit manager

remember our whole ward was quite negative at the beginning (P3). Resistance and hesitancy continued for participants throughout the first cycle as they were unsure about the study purpose and expectations. However, as comprehension of the study purpose and processes grew, resistance diminished. Participant understanding was developed through person-centred facilitation;

having someone external work with them to explain the study aim, structure and requirements. One staff member compared this process to providing patient education:

if we take a bit of time with the patients, they're far more receptive. So having you [facilitator] come on board and just spending a bit of time with us and explaining the whole thing, we were far more receptive and far happier to put in the work (P6).

Other participants outlined how facilitation assisted teams in understanding the relevance and benefits the data held for both nursing and midwifery practice and patient experience:

By the time you [facilitator] kind of stepped on board and we actually had someone facilitating it for us and guiding us, showing us, this is why we need the data. You kind of thought about it differently and you thought, wow, actually we can use this data to change patients experiences and improve them on the ward, as well as staff (P17).

4.6 | Keeping on track

Whilst the data collected were consistently reported as 'valuable', all participants outlined that *support is needed, otherwise it just doesn't make sense, it's just another lot of data collection* (P9). Support was required during all phases of the research including *showing us how to use it [iMPAKT app]* (P18) to collect data; *theming and meeting with the staff* (P3); *feeding back results to the team and using the data* (P16). Participants also expressed the need for support to *put time aside* (P8) to complete the study. One participant explained *I guess just probably time was the main factor; putting it in, trying to collect that data within your workload*

(P19). Another participant stated that *time and resources are always good, but absolutely having a person who understands it and can support that process. Then putting the data in language that makes sense to us* (P9). The value of external support was also echoed by other participants who said, *it's pretty wise to have an assigned facilitator and the same facilitator who knows your progress and where you're going* (P17). Staff expressed the benefit of having external support to *drive the process* (P12) of the study, *keep on track* (P15) with project deadlines and *really help get that discussion happening* (P19). One participant reflected *It would be interesting to see where this was at without a facilitator. I don't think we would have had as much drive or determination, or even as much care* (P17).

4.7 | 'There's a person in the bed'

Engaging with the data prompted staff to stop and consider alternate perspectives. The study provided opportunities for staff to pause their work and *gauge how the patients felt* (P10). This occurred during data collection and again when discussing the results in context with colleagues. Staff reported that *getting that data allowed us more insight into the care that we're providing and into what's not working from other people's perspectives; patients or even other staff members* (P3). The facilitated process of reflecting on and discussing the data also created space for staff to have their perceptions of care delivery challenged. One participant reported *when you see it from a patient perspective, you sort of understand how differently nursing care is delivered or perceived to be delivered* (P5). Staff explained that this insight was used to affirm and improve care delivery and that *if it comes from each other and the patient, then it's going to make the improvement and the change have longevity and success* (P17).

One of the key areas of change reported by staff was their recognition of the patient as a person. Participants said that engagement in the iMPAKT study and with the data collected was *good just in reminding us all [nursing staff] that there's a person in the bed* (P4). Collecting patient stories and utilizing the data generated by the app resulted in staff recognizing the de-personalization that occurs in practice and made staff *more conscious of treating the patient holistically and not just as a person in a bed or a number on the board* (P14). One staff member described the nature of these data in the following quote:

the iMPAKT KPIs actually measure the person, whereas, you know, the standard nursing KPIs just manage what we did to that person. Whereas the iMPAKT data is, how did we make that person feel? and you know, Are they safe? Are their needs being met? Are they valued for what bed space they occupy for five minutes? Have they been heard? more importantly. You know because it's very easy, once the gown goes on, the person goes away (P3).

4.8 | Knowing you are doing a good job

Staff reported that the data captured from the app provided meaningful insight into nursing practice and motivation to continue to deliver person-centred care. It generated understanding and reassurance for staff helping them to *know that their patients are happy and that they [nursing staff] are being attentive to their needs* (P1) offering a different insight into other data sets. One participant explained:

Getting to hear back from the actual people that we give our care to is really rewarding and I think it is good for the staff to hear that. Often in nursing you do not get lots of good feedback, and I think it was really good for them [staff] because I think across the three cycles, they went from having a lot of negative feedback, to not having any negative feedback in some of the KPIs and I think that was really empowering for them (P8).

Participants described the value of the data in providing *something that we could see in front of us, a data set that said you are doing a good job, even if you don't think you're doing a good job* (P3). Teams reported the influence this had on a personal and professional level, stating *It gives you confidence quite a bit, when you hear all those quotes, all these things' patients are saying, it boosts your confidence, boosts your practice, you're like oh I am doing a good job* (P13). Another explained *I think if you know that your patients enjoy having you as their nurse, if they feel safe in your care, and they have positive feedback, then you're inclined to keep providing that care and keep the morale high* (P17).

4.9 | Improving over time

Overall, a trend of improvement over time was noted in study processes, outcome measures, patient experience and workplace culture. Participants reported: *as the study went on, I think it became more user friendly* (P2). They identified that *we've come a long way with all our statistics in the reports and stuff, so it's been really nice to see that it's [participation in the study] had such a positive influence on our ward* (P14). Participants expressed that participation in the study *enabled us to change some of our practice* (P16) and that the data collected in the study was *ammunition for improvements and change because it comes from the patient* (P17).

Participants also described the influence and benefit of utilizing a cyclical approach, stating *If you do it just once it doesn't really give you much indication of what is actually happening. Where if you do those continual cycles, you can see that improvement, or change* (P9). This was confirmed by other participants who reported that *from the second cycle going into the third, we actually realized what a positive difference we were making to patients* (P5) and another who outlined:

the biggest thing was the improvement in care delivery from the iMPAKT data to be able to represent the patient side of it. Even though we have had some challenges as a staff, we have come forward, and we are delivering better care to our patients, and they feel it and that's what it's about (P6).

As well as improving patient experience, participants also reported the positive impact their involvement in the study had on team morale and individual practice, stating that *culture on the ward has changed a million times over, it's much better than what it was (P15)* and *I really, even in myself, saw a lot of personal and professional growth from the start to finish (P17).*

5 | DISCUSSION

The findings from this study provide insight into the processes required and positive outcomes that occur when nursing and midwifery staff engage with data to improve person-centred practice. Healthcare providers and researchers have an ethical responsibility to utilize the data that are collected in practice. However, despite the abundance of data available, a gap often exists in using that data to transform care delivery (Dryden-Palmer et al., 2020). This indicates it is not simply quantity of data that leads to change. The results of this study and others demonstrate that it is the nature of the evidence generated and the process in which it is understood that enhances knowledge translation and action on research in healthcare (Rycroft-Malone et al., 2004; Wilson et al., 2021).

In the well-recognized integrated Promoting Action on Research in Healthcare Services (i-PARIHS) framework, Harvey and Kitson (2016) outline that in order for evidence to influence practice, it needs to include a combination of sources from clinical, policy, local experience and information, patients and research. The quantitative and qualitative results of this study demonstrate that the comprehensive and person-centred nature of the data generated by the person-centred KPIs (McCance et al., 2012) had a significant influence on staff engagement with the data, resulting in improvements in person-centred practice. Staff in this study reported that having data about their practice sparked (and for some re-ignited) a desire to deliver (or continue to deliver) and improve person-centred practice. This is congruent with studies reported by McCance et al. (2015), McCance, Dickson, et al. (2020) and Wilson et al. (2021). The data also held strong relevance to practice as it was collected by the staff and service users at the micro level of care with the intention to evaluate and inform person-centred practice. These findings contribute to the growing body of evidence demonstrating that contextual data that are collected and used in a participatory and collaborative way by staff and service users result in flourishing and the development of person-centred cultures (Cardiff et al., 2020).

Staff also outlined that these data provided unique and meaningful insight into nursing practice from the patient perspective which was different to other data sets regularly used in nursing. Historically, data collected about care delivery have seen the identification of

patients in relation to their illness, gender, age and bed number, which diminishes the acknowledgement of personhood. This phenomenon was described by a participant in the study who said, *once the gown goes on, the person goes away*. McCormack, McCance, and Dewing (2021) acknowledge the importance of social connectivity and the threat that hospitalization can pose to patients and their sense of personhood. They argue that privileging personhood and 'what matters' to the patient as a person, is a key component of person-centred care.

The combination of quantitative and qualitative findings of the study presented in this paper indicates that engaging with the data generated using the person-centred KPIs results in recognition and enhanced awareness of the *person in the bed*. Participants outlined that the outcome of *seeing the patient as a person* was enabled through collaboration with staff and patients in the collection of data and reflection on results. This collaborative, inclusive and participatory approach is in alignment with Practice Development and attributed to the transformation of teams and practice (Hardy et al., 2021) as was seen in this study.

Whilst data have the capacity to inform practice change, unless it is understood and reflected upon by those it relates to, it is unable to be used to its true potential. This process of reflection and analysis in practice is rarely linear and is most effective when undertaken with facilitative support to help end users (staff and patients) understand and use the evidence to inform change (Dryden-Palmer et al., 2020). Facilitation has been increasingly reported as an effective process for working with healthcare teams to explore, develop and implement changes in practice (Hardy et al., 2021). Harvey & Kitson's extensive work developing and refining the i-PARIHS knowledge translation framework has seen facilitation shift from being one of three key elements influencing the success of the implementation of research in practice, to now recognizing it as the 'active ingredient' at the forefront (Harvey & Kitson, 2016).

The qualitative findings of the study reported in this paper strongly indicate that whilst generating meaningful data relating to nursing/midwifery practice is advantageous, facilitation is required if the data are going to be utilized to transform person-centred practice. Staff described the pivotal role and benefit of external facilitation as fundamental in developing understanding of the study purpose and processes, collecting data and enabling the utilization of evidence. Facilitative and collaborative processes enabled teams to reflect on the data, maintain momentum throughout the action cycles and develop person-centred practice changes. Similar findings were highlighted by Gray et al. (2021) who found that facilitative support to was key to generating shared learning and engagement when undertaking research utilizing KPIs. The findings of this study also corroborate with the findings from studies reported by McCance et al. (2016), McCance, Dickson, et al. (2020) and Wilson et al. (2021) that used the person-centred KPIs. In those studies, the value of facilitation was also highlighted in assisting nursing staff to evaluate and develop person-centred practice in response to the data generated by the KPIs.

However, the results of this study do not just confirm other bodies of work. They progress the insights regarding how nurses and midwives can and are able to use these data to develop person-centred practice. It is clear from both quantitative and qualitative findings in this study that working with the KPI data in collaborative and facilitative ways leads to the enhancement of person-centred connections between staff and patients. More specifically, one of the most significant findings of this study is that the quantitative results demonstrate that working with the data generated from the person-centred KPIs results in statistically significant increases in staff levels of person-centredness. These findings provide strong evidence to support the use of the data generated by the KPIs to not only evaluate person-centred practice but improve it for patients and staff. The results also demonstrate that the PCPI-S (Slater et al., 2017) is a useful tool as a pre-post measure when investigating perceptions of person-centredness. Prior to the conduction of this research, no studies could be found that utilized the PCPI-S as a pre- and post-test measure of person-centredness. This is a beneficial finding for those conducting person-centred research, particularly those wanting to measure the influence of an intervention on levels of perceived person-centredness amongst staff.

6 | LIMITATIONS

This study used a convenience sample of participants available in the clinical units which limited sample size. Placing the study in context, it was an action research study exploring perceptions of person-centredness within the six clinical units and the results from the pre-post survey were not used in isolation but interpreted in combination with qualitative data. Another limitation of the study was the number of staff that completed both the pre and post survey in 2018 and 2020. This was attributed to a high level of staff turnover across the units, which is not unusual in nursing/midwifery research studies that are cyclical in nature, occurring over long periods of time. This could also have been affected by staff making an error or not using the same identifier in both surveys. Due to the low sample size and limited participant information, inter-demographic comparisons were unable to be drawn. Further studies with larger sample size (particularly involving midwives) are recommended to enhance the strength and transferability of the findings in other contexts.

7 | CONCLUSION

In summary, the findings from this study confirm that engaging with the data generated by the person-centred nursing KPIs developed by McCance et al. (2012) via a mHealth app in cycles over time, leads to increased person-centred practice. The findings from this study highlight that nurses and midwives find the nature of the evidence

generated through the KPIs to be advantageous in the evaluation and development of person-centred practice. The process of utilizing these data can be enhanced through facilitative, collaborative and inclusive processes supporting teams to understand the purpose and process of the KPIs and measurement framework. Other outcomes of applying these strategies include the generation of data substantiating the 'good job' that nurses and midwives do, humanizing the care experience through seeing the patient as a person, and improvements in person-centred practice for patients and staff. The methods and results of this study provide a clear outline of processes and analysis for others to replicate in a range of different clinical and research contexts. They also demonstrate the value of using the PCPI-S (Slater et al., 2017) as a pre-post measure in intervention and action-orientated studies focused on developing and evaluating person-centredness.

AUTHOR CONTRIBUTIONS

All authors have agreed on the final version and meet at least one of the following criteria (recommended by the ICMJE*): (1) substantial contributions to conception and design, acquisition of data or analysis and interpretation of data; (2) drafting the article or revising it critically for important intellectual content.

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CONFLICT OF INTEREST

Nil conflict of interest has been declared by the authors.

NO PATIENT OR PUBLIC CONTRIBUTION

The aim of the study was to explore the experience of nursing and midwifery staff utilizing data collected via a mHealth app and the influence this had on the development of person-centred practice. As such, no patients, service users, caregivers or members of the public were involved in this research.

PEER REVIEW

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DATA AVAILABILITY STATEMENT

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

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