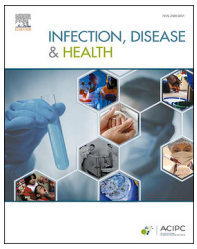
Infection, Disease & Health 31 (2026) 100383

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: http://www.journals.elsevier.com/infection-disease-and-health/



Research paper

User experience of air purifiers for the purpose of reducing acute respiratory tract infections: A cross-sectional survey in residential aged care settings

Bismi Thottiyil Sultanmuhammed Abdul Khadar [a,b,*], **Brett G. Mitchell** [a,b,c,d,e], **Vanessa M. McDonald** [a,b], **Julee McDonagh** [f,g], **Jenny Sim** [a,f,h]

[a] *School of Nursing and Midwifery, University of Newcastle, Newcastle, NSW 2308, Australia*
[b] *Hunter Medical Research Institute, Newcastle, NSW 2305, Australia*
[c] *School of Nursing, Avondale University, Lake Macquarie, NSW 2265, Australia*
[d] *Nursing and Midwifery, Monash University, VIC 3800, Australia*
[e] *Central Coast Local Health District, Gosford, NSW 2250, Australia*
[f] *School of Nursing, Faculty of Science, Medicine & Health, University of Wollongong, Wollongong, NSW 2522, Australia*
[g] *Centre for Chronic and Complex Care Research, Blacktown Hospital, Western Sydney Local Health District, Blacktown, NSW 2148, Australia*
[h] *School of Nursing, Midwifery & Paramedicine, Australian Catholic University, North Sydney, NSW 2060, Australia*

Received 8 April 2025; received in revised form 22 July 2025; accepted 29 July 2025
Available online 15 August 2025

KEYWORDS
Air purifier;
Air purification;
HEPA filter;
Acceptability;
User experience;
Residential aged care facilities

Abstract *Background:* A recent randomised controlled trial has identified that air purification within residential aged care settings may reduce acute respiratory tract infections. User acceptability and experience with air purifiers are important components of the evaluation of this novel intervention.
Methods: A cross-sectional survey was conducted with residents and care staff in residential aged care facilities. The Theoretical Framework of Acceptability was used to examine acceptability and fixed response, and open-ended questions were used to explore experiences. Quantitative data were analysed descriptively. Content analysis with a deductive approach was used to analyse responses to open-ended questions.
Results: Between the 30th of September and the 2nd of November 2023, 38 residents with a median age of 89 years (IQR = 9) and 48 care staff with a median age of 45 years

* Corresponding author. School of Nursing & Midwifery, University of Newcastle, Callaghan, NSW, Australia.
E-mail address: Bismi.ThottiyilSultanmuhammedAbdul@uon.edu.au (B. Thottiyil Sultanmuhammed Abdul Khadar).

https://doi.org/10.1016/j.idh.2025.07.004
2468-0451/© 2025 The Author(s). Published by Elsevier B.V. on behalf of Australasian College for Infection Prevention and Control. This is an open access article under the CC BY license (http://creativecommons.org/licenses/by/4.0/).

(IQR = 19) completed surveys. All residents and care staff participants found having an air purifier in residents' rooms acceptable. All residents and most care staff participants expressed positive experiences with air purifier use. Most residents (76.3 %) were satisfied with the air purifier's current features.
Conclusion: The survey has provided evidence of participants' high level of acceptability of using air purifiers in residential aged care facilities and their positive experiences with air purifier use. This research has demonstrated that in-room air purification was acceptable to both residents and care staff. The findings from this study may inform future large-scale projects to implement air purification technology into healthcare systems.
© 2025 The Author(s). Published by Elsevier B.V. on behalf of Australasian College for Infection Prevention and Control. This is an open access article under the CC BY license (http://creativecommons.org/licenses/by/4.0/).

Highlights

- We examined the acceptance of in-room air purification using air purifiers among residents and carers of aged care facilities.
- The Theoretical Framework of Acceptability (TFA) was used to evaluate user acceptance of air purifiers.
- Results suggest a high level of acceptability of using air purifiers and positive experiences.

Introduction

Residents of residential aged care facilities (RACF) are highly susceptible to airborne infections [1]. A recent landmark randomised controlled trial (RCT) examined the effectiveness of in-room air purifiers with high-efficiency particulate air (HEPA) filters on acute respiratory tract infections (ARIs) in three residential aged care facilities (RACFs) in Australia [2]. The study identified significant reductions in ARI in participants who completed the entire study [2].

Consideration of both the efficacy and acceptability of interventions is crucial, as even the most effective solutions may fail if participants do not find them acceptable and feasible. Ensuring that an intervention is both effective and well-received increases the likelihood of successful implementation. The Theoretical Framework of Acceptability (TFA) [3] was used to conduct a cross-sectional survey of residents and care staff, which was conducted during the last phase of the RCT.

Methods

Study design

A cross-sectional survey was conducted over five weeks, from the 30th of September to the 2nd of November 2023.

Setting

Three RACFs in regional NSW who participated in the RCT were included in the study. The facilities had at least 50 beds and were accredited by the Aged Care Quality and Safety Commission. The Executive Board of the facilities approved the participation of each study site.

Participants

There were two participating groups for this study:

1) Residents who participated in the RCT from the enrolled facilities.
2) Care staff from the enrolled facilities who cared for residents in the RCT.

Purposive sampling was used to recruit residents, and convenience sampling was used to recruit care staff. There were approximately 60 care staff members across the three participating facilities. One member of the research team was responsible for recruiting participants.

Inclusion criteria

Residents

The residents were eligible to participate in the survey if they were: (1) participants in the air purifier RCT; (2) able to provide informed consent; (3) able to respond to survey questions independently or with assistance.

Care staff

Staff members were eligible to participate if they were: (1) involved in direct care delivery for residents who participated in the RCT; (2) employed as Assistants in Nursing, Enrolled Nurses, or Registered Nurses.

Exclusion criteria

Residents

Residents were excluded: (1) if they did not participate in the RCT and had no experience with in-room air purification; (2) if they had a clinical diagnosis of cognitive

impairment or dementia that prevented their ability to provide informed consent.

Care staff

Staff were excluded if they were not directly involved in the care of residents.

Data collection

All eligible participants received a participant information sheet containing information about the study and instructions for completing the survey. Informed written consent was obtained from all participants. A paper survey was distributed to participants, which took approximately 15 min to complete. If required, residents were provided with support from a member of the research team to complete the survey. A member of the research team followed up with participants weekly to collect completed surveys.

Data sources and measurement

Survey instrument. Two versions of the survey, one for the residents and one for the care staff, were developed. Each version contained three components: demographic information, acceptability (TFA), and user experience. A copy of each survey is included in the supplementary files (S8 and S9).

The TFA examines seven constructs that explore the end-user acceptability of healthcare interventions [3]. The framework was chosen due to its comprehensive, adaptable, and user-centred approach to the evaluation of healthcare interventions [4], and because it has been used widely in previous studies [5—7]. The TFA measures participants' acceptance of using an air purifier across seven constructs: affective attitude (emotional responses), burden (perceived challenges), ethicality (ethical or moral concerns), intervention coherence (understanding of the intervention), opportunity costs (sacrificing opportunities), perceived effectiveness (perception of effectiveness), and self-efficacy (confidence) [3]. A 5-point Likert scale was used to collect participants' views on each construct. Fig. 1 provides a visual illustration of the constructs, and Supplementary Table S1 maps the TFA constructs to the questions used in the survey. TFA scores of $\geq$4 indicate acceptance.

User experience questions examined issues such as noise, size, and the air purifiers' impact on movement inside the room. Participants were also asked if they wanted to continue using the device. The care staff survey also sought concerns reported by residents regarding air purifiers.

Bias

Recall bias was minimised by surveying participants during the last phase of the RCT. Conducting the survey at this time sought to ensure that participants were still using in-room air purifiers and could recall and report their experiences while they were still exposed to the intervention. The RCT was conducted over six months, and the survey was administered in the last five weeks of the trial.

Data analysis

Quantitative data

Stata Now/BE 18.5 version [8] was utilised to analyse the quantitative data. Missing data analysis was conducted, and blank data fields were treated as missing. Descriptive statistics were used to analyse age, gender, and TFA constructs. The acceptance scores for each TFA construct were calculated according to the developers' instructions [3]. Burden, Ethicality, and Opportunity constructs were reverse-scored as these questions were negatively framed. TFA scores $\geq$4 indicated that the intervention was acceptable. Scores $<$3 indicated that the intervention was not acceptable.

Open-ended questions

Qualitative feedback was collected using four open-ended questions related to participants' experience with the air purifiers. Not all participants answered these questions. Deductive content analysis was used to analyse and interpret the qualitative data due to its previous application in healthcare, including gerontological [9] and survey-based studies [10]. The analysis involved developing categories and sub-categories derived from participants' feedback in response to each open-ended question [11]. The codes

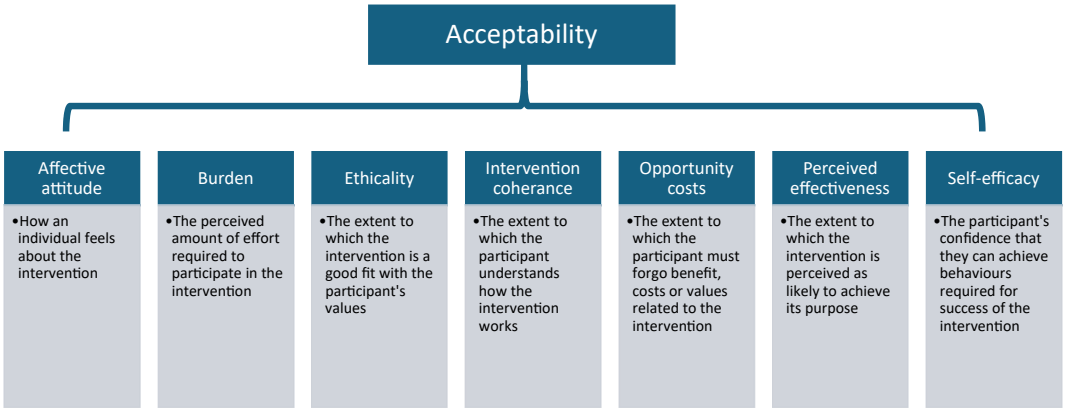


Fig. 1 Conceptual figure summarizing the Theoretical Framework of Acceptability (TFA) constructs (Adapted from Sekhon, Cartwright and Francis, 2017) [5].

were quantified to find out the frequency and percentage of repeated patterns.

Results

Participants

Forty-one (41) of the 104 residents who completed the RCT were deemed eligible to participate in this study. All 41 eligible residents were invited to participate in the survey, which was conducted between the 30th of September and the 2nd of November 2023. Completed surveys were received from 38 residents (92.7 % response rate). A total of 48 care staff completed the survey (80.0 % response rate) over the same period. The median age of residents was 89.0 (IQR = 9) years, and the median age of care staff was 45.0 (IQR = 19) years. Further demographic information about participants is provided in Table 1.

Survey results

Residents

The mean scores for six of the seven TFA constructs were >4, indicating high acceptance. High levels of acceptance were found in the affective attitude, burden, ethicality, intervention coherence, opportunity costs, and self-efficacy constructs (see Table 2). The score for 'perceived effectiveness' of having an air purifier was lower than other constructs (3.6, SD = 0.98). Many participants reported a neutral response to this item (n = 23, 60.5 %). One participant (2.6 %) reported a negative response. Sub-group analysis based on the participants' sex was also conducted. There was no significant difference between male and female participants' acceptance of air purifiers (Supplementary Tables S2 and S6).

Participants' experiences of using in-room air purifiers are reported in Table 3. All participants (100 %) reported that the air purifiers were quiet during the day. One participant (2.6 %) reported that they found the air purifier noisy at night. Most participants provided positive feedback about the size of the air purifier (n = 36, 94.7 %) and indicated that it did not interfere with movements or activities in their room (n = 36, 94.7 %). Most participants (n = 34, 89.5 %) indicated that they wished to continue using their air purifier.

Table 1 Demographic characteristics of participants (Residents & Care staff).

Variables	Residents (n = 38)	Care Staff (n = 48)
Age (years)		
Median (IQR)	89 (9.00)	45 (19.00)
Mean	88.68 (6.35)	43.49 (12.24)
Range	75—98	20—69
Sex		
Male (%)	16 (42.1 %)	6 (12.5 %)
Female (%)	22 (57.9 %)	42 (87.5 %)
Job roles		
RN (%)		30 (62.5 %)
EN (%)	NA	5 (10.4 %)
Assistant in Nursing (%)		13 (27.1 %)
Facility		
A (%)	16 (42.1 %)	26 (54.2 %)
B (%)	8 (21.1 %)	6 (12.5 %)
C (%)	14 (36.8 %)	16 (33.3 %)

Care staff

The mean scores for five of the TFA constructs were ≥4, indicating broad acceptance of in-room air purification among care staff. Acceptance was reported in the affective attitude, burden, intervention coherence, opportunity costs, and self-efficacy constructs (see Table 2). The two constructs with scores <4 were ethicality and perceived effectiveness. The score for ethicality was 3.5 (SD = 1.07) and there was a mix of positive (n = 25, 52.1 %), neutral (n = 16, 33.3 %), and negative (n = 7, 14.6 %) responses. The score for 'perceived effectiveness' was 3.7 (SD = 0.78), with many participants reporting a neutral response (n = 19, 39.6 %) and 2 participants (4.2 %) reporting a negative response (see Table 2). A subgroup analysis identified that ENs (5.00) and RNs (4.5, SD = 0.66) had the highest levels of acceptance (Table S4). The only construct that reported a statistically significant difference across job roles was 'opportunity costs' (p = 0.044) (see Table S7).

Care staff experiences with air purification are presented in Table 3. Most care staff were not concerned about the noise of the air purifier during the day (n = 42, 87.5 %). Ten participants (20.8 %) indicated that they found the air purifiers noisy at night. The size of the air purifier was not a major concern (n = 39, 81.3 %), and most indicated that the air purifier did not interfere with day-to-day activities (n = 42, 87.5 %). Most care staff (n = 38, 79.2 %) indicated that they felt safer due to having air purifiers in the facility. Most participants (n = 44, 91.7 %) indicated that they wanted to see the use of air purifiers continue within their facility.

Open-ended questions

Residents

Most respondents (76.4 %) were satisfied with the existing features of the air purifiers. Positive feedback about nighttime features was received from one participant (2.6 %). Suggestions for improvement included reducing the size of the air purifier and including wall-mountable options. When asked about challenges involved in having an air purifier, most participants (89.5 %) did not report any challenges. Two participants (5.2 %) indicated challenges fitting the air purifier into their room. One participant (2.6 %) reported a dry throat, which they attributed to the air purifier. Another participant (2.6 %) reported an operational issue where the air purifier unexpectedly turned off.

Feedback on the health impacts of using an air purifier was mixed. Most participants provided positive feedback or were neutral about the impact of the air purifier on their health. One participant (2.6 %) was negative and provided feedback that the air purifier dried the air and caused a sore throat. When asked for further feedback, many responded that they were satisfied with the use of the air

Table 2 Participants' responses to air purifier acceptance based on TFA constructs by residents and care staff.

Resident Participants ($N = 38$)								Care Staff Participants ($N = 48$)							
Question (TFA construct)	Strongly positive n (%)	Positive n (%)	Neutral n (%)	Negative n (%)	Strongly negative n (%)	Mean	SD	Question (TFA construct)	Strongly positive n (%)	Positive n (%)	Neutral n (%)	Negative n (%)	Strongly negative n (%)	Mean	SD
Did you like or dislike having an air purifier in your room? (Affective attitude)	25 (65.8)	12 (31.6)	0	1 (2.6)	0	4.6	0.64	Did you like or dislike having an air purifier in your facility? (Affective attitude)	17 (35.4)	29 (60.4)	1 (2.1)	1 (2.1)	0	4.3	0.62
How much effort did it take to have an air purifier in your room? (Burden)	36 (94.7)	2 (5.3)	0	0	0	5.0	0.23	How much effort did it take to have an air purifier in your facility? (Burden)	22 (45.8)	12 (25.0)	7 (14.6)	5 (10.4)	2 (4.2)	4.0	1.19
There are moral or ethical consequences of having an air purifier in your room. (Ethicality)	32 (84.2)	4 (10.5)	1 (2.6)	0	1 (2.6)	4.7	0.76	There are moral or ethical consequences of having an air purifier in your facility. (Ethicality)	10 (20.8)	15 (31.3)	16 (33.3)	5 (10.4)	2 (4.2)	3.5	1.07
It is clear to me that having an air purifier in my room will help reduce the risk of respiratory infections I might experience. (Intervention coherence)	13 (34.2)	17 (44.7)	7 (18.4)	1 (2.6)	0	4.1	0.80	It is clear to me that having an air purifier in my facility will help reduce the risk of respiratory infections I or my resident might experience. (Intervention coherence)	10 (20.8)	28 (58.3)	9 (18.8)	1 (2.1)	0	4.0	0.70
Having an air purifier in my room interfered with my other priorities. (Opportunity costs)	32 (84.2)	6 (15.8)	0	0	0	4.8	0.37	Having an air purifier in your facility interfered with my other priorities. (Opportunity costs)	14 (29.2)	24 (50.0)	6 (12.5)	4 (8.3)	0	4.0	0.88

(*continued on next page*)

Table 2 (*continued*)

Resident Participants ($N = 38$)								Care Staff Participants ($N = 48$)							
Question (TFA construct)	Strongly positive n (%)	Positive n (%)	Neutral n (%)	Negative n (%)	Strongly negative n (%)	Mean	SD	Question (TFA construct)	Strongly positive n (%)	Positive n (%)	Neutral n (%)	Negative n (%)	Strongly negative n (%)	Mean	SD
Having an air purifier in my room has reduced the number of acute respiratory infections that I have experienced. (Perceived effectiveness)	10 (26.3)	4 (10.5)	23 (60.5)	0	1 (2.6)	3.6	0.98	Having an air purifier in my facility has reduced the number of acute respiratory infections experienced. (Perceived effectiveness)	7 (14.6)	20 (41.7)	19 (39.6)	2 (4.2)	0	3.7	0.78
How confident did you feel about having an air purifier in your room? (Self-efficacy)	23 (60.5)	11 (29.0)	2 (5.3)	0	2 (5.3)	4.4	1.00	How confident did you feel about having an air purifier in your facility? (Self-efficacy)	13 (27.1)	29 (60.4)	2 (4.2)	3 (6.3)	1 (2.1)	4.0	0.87

TFA = Theoretical Framework of Acceptability; SD = Standard Deviation.

Table 3 Feedback related to participants' experiences with in-room air purifiers (residents and care staff).

Residents (N = 38)			Care Staff (N = 48)		
Questions related to air purifier features	Responses	n (%)	Questions related to air purifier features	Responses	n (%)
Did you find the air purifier noisy during the day?	Yes	0	Did you find the air purifier noisy during the day?	Yes	6 (12.5)
	No	38 (100.0)		No	42 (87.5)
	Unsure	0		Unsure	0
Did you find the air purifier noisy at night?	Yes	1 (2.6)	Did you find the air purifier noisy at night?	Yes	10 (20.8)
	No	37 (97.4)		No	27 (56.3)
	Unsure	0		Unsure	11 (22.9)
			Did residents share concerns with you about air purifiers?	Yes	20 (41.7)
				No	24 (50.0)
				Unsure	4 (8.3)
			Did you feel safer by having an air purifier in your facility?	Yes	38 (79.2)
				No	4 (8.3)
				Unsure	6 (12.5)
The size of the air purifier was suitable for my room	Strongly agree	29 (76.3)	The size of the air purifier was suitable for resident rooms.	Strongly agree	7 (14.6)
	Agree	7 (18.4)		Agree	32 (66.7)
	Disagree	2 (5.3)		Disagree	8 (16.7)
	Strongly disagree	0		Strongly disagree	1 (2.1)
The air purifier did not impact my movement or activities in my room	Strongly agree	29 (76.3)	The air purifier did not impact my movement or activities in resident rooms.	Strongly agree	8 (16.7)
	Agree	7 (18.4)		Agree	34 (70.8)
	Disagree	2 (5.3)		Disagree	5 (10.4)
	Strongly disagree	0		Strongly disagree	1 (2.1)
Do you want to keep using an air purifier after the research project is completed?	Yes	34 (89.5)	Would you like to see air purifiers continue to be used in resident rooms to reduce the risk of respiratory infection?	Strongly agree	12 (25.0)
	No	3 (7.9)		Agree	32 (66.7)
	Unsure	1 (2.6)		Disagree	4 (8.3)
				Strongly disagree	0

purifier (76.2 %). Other participants provided information about errors or concerns that were resolved quickly. One participant (2.6 %) indicated that they did not want to continue using the air purifier. The summary of key findings from the content analysis is provided in Table S4.

Care staff

A large proportion of care staff (n = 29, 60.4 %) did not provide a response related to the question on air purifier features. Potential modifications suggested by respondents included reducing light levels at night (14.6 %), development of ducted versions (2.1 %), having longer power cords (2.1 %), and the inclusion of a remote control (2.1 %). Approximately one-third of care staff who responded to the question regarding 'challenges' (n = 19, 36.0 %) had no concerns. Some care staff reported concerns related to the placement of the air purifier (10.4 %), operational and/or maintenance issues (8.4 %), and some participants indicated that residents expressed concerns (10.4 %). Care staff were asked about the impacts of having air purifiers in residents' rooms. Among those who responded, all participants expressed either positive or neutral effects. When asked for further feedback, all respondents provided positive responses, with many highlighting the positive impacts and satisfaction with the use of air purification. The results from the content analysis of the care staff survey are provided in Table S5.

Discussion

Participants in this study have reported high levels of acceptance and positive experiences related to in-room air purification using HEPA filters within residential aged care facilities. These findings build on results from a recent RCT [2], which identified clinically important reductions in ARIs among participants who used in-room air purifiers in multiple residential aged care facilities.

In this study, acceptance was evaluated across seven constructs of the TFA. Residents' feedback regarding 'perceived effectiveness' was lower than all other constructs. The lower score for 'perceived effectiveness' may relate to residents' knowledge about air purification, or it may be associated with the crossover design of the RCT. Participants in this study were involved in a double-blind, crossover RCT [2] and therefore only experienced the intervention for half of the total duration of the study. We hypothesise that the reduced time of exposure to in-room air purification within the RCT may have led to lower scores of perceived effectiveness. Previous research has highlighted that the timing and duration of exposure can significantly affect the outcomes of an intervention [12]. Care staff feedback on 'perceived effectiveness' was also mixed and may have been influenced by the study design.

All residents and most of the care staff reported positive experiences with the use of air purifiers. Most residents were satisfied with the current features of the air purifiers and wanted to continue using the air purifiers. Among care staff who participated, most reported having no difficulties, and many reported positive health effects related to air purification. Participants provided feedback on air purifier placement and their views regarding modifications that they expect would be useful in the future. Participants' experiences are known to relate to the practical technical elements of a device and how the device impacts their everyday lives [13].

The findings from this study demonstrate that residents and care staff had no major challenges or negative impacts on their lives due to the placement of an in-room air purifier within an RACF. Some open-ended responses indicated that participants perceived a difference in the room air as a result of air purification. Given the challenges faced by frontline care staff in managing ARI outbreaks in RACFs, this feedback suggests that residents and care staff are open to new interventions to improve indoor air quality. Furthermore, both residents and care staff did not find that using an air purifier interfered with their day-to-day activities. Thomas and colleagues (2024) [14] explored the difficulties that residents and staff within RACFs experienced during the pandemic and found that preventing infections was the major concern. Our findings suggest that air purification to improve indoor air quality may play an important role in this setting and that it appears to be acceptable to end-users.

Acceptance is known to vary based on factors such as usability, trust, and perceived benefits [15,16]. This survey has examined end-user acceptance and experience with using air purification in residential aged care settings. Findings suggest that air purifiers were perceived as effective and well accepted by both residents and care staff. Many participants expressed a desire to continue using air purifiers in residents' rooms, suggesting the potential use of air purification as an adjunct infection prevention and control strategy in residential aged care settings.

Strengths and limitations

This study has several strengths. The survey was conducted in the final stages of an RCT, and all participants had prolonged exposure to the intervention. The survey was conducted in the final 5 weeks of the 6-month RCT to minimise recall bias.

This study also has several limitations. This study was cross-sectional and conducted with participants who were involved in an RCT. Purposive and convenience sampling were used. This may introduce the potential for selection bias. The findings may be limited in generalisability due to the population involved. The study was limited to participants involved with the RCT [3], resulting in a smaller sample. The smaller sample size limited the utility of subgroup analysis and interpretation of subgroup data. The parent study was a double-blind, crossover RCT, where each participant acted as their own control for a period of the study. Blinding of participants and their exposure to the intervention will have impacted participants' perceptions of the effectiveness of the intervention. Finally, not all respondents provided responses to the open-ended questions.

To address these limitations, we recommend future longitudinal studies with larger sample sizes using appropriate sampling strategies. This may help identify the causal relationships between different variables and their influence on the acceptance of air purification in residential aged care settings.

Conclusion

In this study, residents and care staff expressed acceptance of using air purification in residential aged care facilities in five of the seven TFA constructs. Residents provided high levels of acceptance in affective attitude, burden, ethicality, intervention coherence, opportunity costs, and self-efficacy. Care staff provided broad acceptance in the affective attitude, burden, intervention coherence, opportunity costs, and self-efficacy constructs. Both residents and care staff had mixed responses to the 'perceived effectiveness' construct, and care staff had mixed responses related to 'ethicality'. Most respondents provided positive feedback on the use of in-room air purification and some important potential modifications to portable air purifiers were identified by end-users. Given these findings, we conclude that most residents and most care staff found in-room air purification with HEPA filters in residential aged care facilities to be acceptable. Future research is required to test novel interventions such as air purification in residential aged care settings. This technology appears to be acceptable to most residents and staff and larger scale studies to test its effectiveness in residential aged care settings are warranted.

Ethics

Informed written consent was sought from all participants. The Avondale Human Research Ethics Committee granted approval to conduct the study (Approval No: ETH.2023.011). The University of Newcastle Research Integrity Unit reviewed the study and provided reciprocal approval (External HREC approval No: H-2023-0356).

Authorship statement

- Conceptualization — BK, BM, JS, VM, JM
- Data curation- BK, BM
- Formal analysis — BK, JS
- Funding acquisition — BM
- Investigation — BK
- Methodology- BK, BM, JS, VM, JM
- Project administration — BK, BM
- Resources — BK, BM
- Software — N/A
- Supervision- BM, JS, VM, JM
- Validation — BK, BM, JS
- Visualization — BK, BN, JS, VM, JM
- Writing — original draft — BK
- Writing — review & editing- BK, BM, JS, VM, JM

Provenance and peer review

Not commissioned; externally peer reviewed.

Data access and availability

The primary author has access to all the data in the study. All authors take responsibility for the integrity of the data and the accuracy of the data analysis. Data are available upon request, subject to ethical approvals.

Funding

BTSA was supported by an Australian Government Department of Education — Research Training Program (RTP) Strategic Engagement Scheme (SES) Scholarship at the University of Newcastle, Australia. BGM is a recipient of a National Health and Medical Research Council (NHMRC) Investigator grant (GNT2008392). JM is also a recipient of an NHMRC Investigator grant (GNT2034202). The funder(s) had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication.

Declaration of competing interest

One author has an editorial affiliation with the journal. They played no role in the peer review or decision-making process for this paper. Other authors have no conflicts of interest to declare.

Acknowledgements

The authors wish to acknowledge and thank the participants in this study, both residents and care staff.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.idh.2025.07.004.

References

[1] Diaz-Decaro JD, Launer B, McKinnell JA, Singh R, Dutciuc TD, Green NM, et al. Bayesian evidence and epidemiological implications of environmental contamination from acute respiratory infection in long-term care facilities. Epidemiol Infect 2018;146(7):832—8.

[2] Khadar BTSA, Sim J, McDonald VM, McDonagh J, Clapham M, Mitchell BG. Air purifiers and acute respiratory infections in residential aged care: a randomized clinical trial. JAMA Netw Open 2024;7(11):e2443769. e.

[3] Sekhon M, Cartwright M, Francis JJ. Development of a theory-informed questionnaire to assess the acceptability of healthcare interventions. BMC Health Serv Res 2022;22(1):279.

[4] Sekhon M, Cartwright M, Francis JJ. Acceptability of healthcare interventions: an overview of reviews and development of a theoretical framework. BMC Health Serv Res 2017;17(1):1—13.

[5] Timm L, Annerstedt KS, Ahlgren JÁ, Absetz P, Alvesson HM, Forsberg BC, et al. Application of the theoretical framework of acceptability to assess a telephone-facilitated health coaching intervention for the prevention and management of type 2 diabetes. PLoS One 2022;17(10):e0275576.

[6] Sandell T, Schütze H, Miller A, Ivers R. Patients' acceptance of a shared cancer follow-up model of care between general practitioners and radiation oncologists: a population-based survey using the theoretical framework of acceptability. BMC Prim Care 2023;24(1):86.

[7] Trebilcock M, Shrubsole K, Worrall L, Ryan B. A survey of speech pathologists' opinions about the prospective acceptability of an online implementation platform for aphasia services. Int J Lang Commun Disord 2023;58(2):390—405.

[8] StataCorp. Stata statistical software: release. Encycl Res Method Criminol Crim Just 2024;18(5). https://www.stata.com/statanow/. [Accessed 27 September 2024].

[9] Elo S, Kyngäs H. The qualitative content analysis process. J Adv Nurs 2008;62(1):107—15.

[10] Donath C, Winkler A, Graessel E, Luttenberger K. Day care for dementia patients from a family caregiver's point of view: a questionnaire study on expected quality and predictors of utilisation-part II. BMC Health Serv Res 2011;11:1—7.

[11] Bengtsson M. How to plan and perform a qualitative study using content analysis. Nurs Plus open 2016;2:8—14.

[12] King EM, Behrman JR. Timing and duration of exposure in evaluations of social programs. World Bank Res Obs 2009;24(1):55—82.

[13] Leonardsen A-CL, Hardeland C, Helgesen AK, Grøndahl VA. Patient experiences with technology enabled care across healthcare settings-a systematic review. BMC Health Serv Res 2020;20:1—17.

[14] Thomas S, Bolsewicz K, Latta R, Hewitt J, Byles J, Durrheim D. The impact of public health restrictions in residential aged care on residents, families, and staff during COVID-19: getting the balance right. J Aging Soc Pol 2024;36(6):1318—37.

[15] Mou J, Shin D-H, Cohen J. Understanding trust and perceived usefulness in the consumer acceptance of an e-service: a longitudinal investigation. Behav Inf Technol 2017;36(2):125—39.

[16] Tao D, Shao F, Wang H, Yan M, Qu X. Integrating usability and social cognitive theories with the technology acceptance model to understand young users' acceptance of a health information portal. Health Inf J 2020;26(2):1347—62.