

Airport practical tools for supporting passengers with hidden disability: a perspective of major Australian airports

Abstract

This study investigates six major Australian airports. Semi-structured interviews were determined to be a suitable approach in the present study to explore available practical resources for supporting passengers with a Hidden disability (HD). An interview process was conducted with six major Australian airport managers and customer experience managers coordinating the HD programme at their respective airports. The findings shows that the implementations of the HD programme suffered from a lack of appropriate resources to support passengers with HDs at airports, participants commented on an urgent need for providing appropriate tools to support their passengers thought their journey. Finally, it is hoped that the present study may contribute to theory and practice in meaningful ways. It might provide a more theoretical, sound, and detailed model for understanding facilities to cater the need of passengers with HD at airports.

Keywords: Australian airports, passengers, hidden disability, airport practical tools

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Introduction and background of the study

Airline passengers with a Hidden disability (HD) could find it difficult to navigate airport environment and access passenger services such as check-in, waiting for boarding or embark the aircraft without appropriate facilities. In 2023 the International Air Transport Association¹ has reported that the need to provide appropriate assistance to passengers with a HD navigating airport and onboard. One way to achieve a seamless journey for passengers with HD could be through the provision of practical resources to cater for their needs. These practical resources include sensory rooms, trained guide Dogs, sensory maps, pictorial guides, security lane, airport signage etc.

The term HD could be described as any invisible disorder experience by an individual who is difficult to recognize it by another person. Airline passengers with HD could face negative experience at airport or aircraft cabin environment if practical resources are not available. For this reason, many airports have implemented a Hidden Disability Assistance Program (HDAP), which aims to provide appropriate facilities to support their journey for those who express a need for help. Though the use of physical facilities, such as the sunflower lanyard, staff may be able to recognize and respond to the additional support needs of travelers at all stages of their journey.

Unless airlines and airports are aware of the challenges travelers with HDs may face within the terminal space due to lack of adequate facilities, it is challenging to provide proper support that meets their needs. There is limited research related to the airport's practical tools that has explicitly addressed either the challenges or the experiences of travelers with HDs in the airport context. Considering this, the purpose of this study was to understand facilities offered to passengers with HD by airport operators?

Literature review

Services and facilities for passengers with hidden disabilities

In this section, the authors presented typical facilities offered to passengers with an HD by airports.

Figure 1 shows range of support facilities that can offer to travelers with an HD by airports. These facilities are the practical tools most airports provide as part of the implementation strategy for assisting passengers with various disabilities. The rationale for providing these facilities is to address the challenges faced by passengers with an HD. HDAPs are still a new tool for airports, having been used for the first time in 2016 by London Gatwick Airport. The following section reviews the challenges encountered by travellers with an HD during their journey.

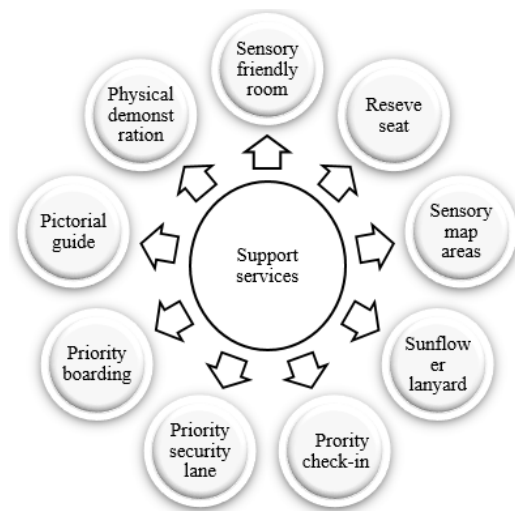


Figure 1 Example of airport hidden disability facilities for supporting passengers.

Zahabi et al.,² and Hara et al.,³ are two examples of studies that support the findings of Peterson et al.,⁴ on the issue of the facilities at airport as being challenging for people with HDs. Airport facilities can be tangible and intangible resources that can guide or ease the movement of a passenger with a disability through the physical environment. As a result, the lack of adequate provision of facilities for supporting people with a variety of disabilities can create more negative travel experiences.

Guerreiro et al.,⁵ provided additional insights on the importance of mobile devices for assisting passengers at airports. They recognize that people with disabilities cannot travel independently without appropriate navigation facilities. They highlighted the urgent need to design technologies such as Bluetooth Low Energy (BLE) beacon to enhance the smooth accessibility of passengers with an HD.

Legge et al.,⁶ published a technical note on the ways to address the airport way findings in U.S aviation and found that most of the difficulties of way finding faced by travellers with disabilities include the nature of their disabilities, the type of assistance airport staff offers to them and the staff training. They recommended airports introduce a digital map system in addition to maps that airports use to display on boards so that passengers could download the maps from their phones before arriving at airports. Indeed, it is an essential element that can address the accessibility of airport facilities. Although their recommendations have some limitations because it lacks evidence from the mouth of the passengers.

Chang et al.,⁷ explored the supply-side for servicing travellers with impairment and highlighted the importance of facilities used by airline operators to aid the navigation of their passengers. They mentioned the relationship between the support received by tourist and their continuous intention to travel for tourism, leisure, or economic trips.

Figure 2 describes factors that including facilities for assisting passengers with disabilities in the cause of their journey. The authors mentioned that the provision of facilities such as wheelchair-accessible toilets and user-friendly restrooms are the facilities required based on passengers’ perspectives for enhancing their travel experiences. It is important airport operators to understand that passengers with an HD may require more sophisticated facilities based on their respective disabilities that passenger with physical disabilities. The proposed model further explained the need for barrier-free lifts and accessible ramps to ease movement from the car park to the terminal building. They have concluded that many travellers with HD are unwilling to travel by air due to the lack of assurance for providing facilities to accommodate their needs at airports. Since researchers offer insights into the importance of facilities for navigating passengers with HD through the airport, it is equally important to further review facilities they may require using while in the aircraft cabin.

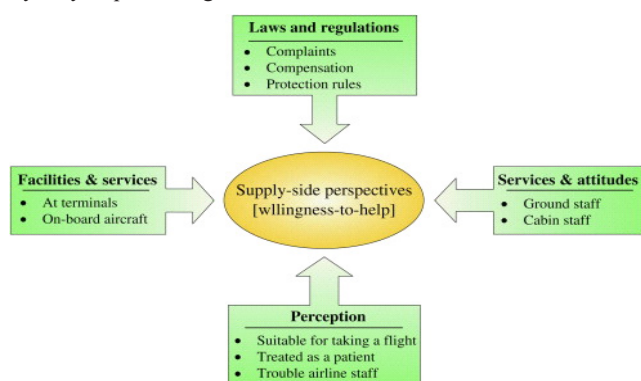


Figure 2 Supply-side perspective for servicing impaired air passengers.⁷

Facilities offered by sunflower airports

In this section, authors reviewed facilities offered to passengers with an HD across the websites of the top 100 world’s airports as ranked by Skytrax in 2020.⁸ Skytrax is a United Kingdom-based international air transport rating organization. The Skytrax also serve as air transport advisors to airlines and airports. As part of

their mandate, Skytrax offers world airport awards annually to the airports qualified for the award based on their performance or quality of services. The authors of the present paper used search terms such as “hidden”, “disability”, “facilities” and found only 12 airports had implemented an HDAP and offered facilities for passengers with HD. These facilities include mobile apps, sensory rooms, sensory maps, social storybooks, guide dogs, and unique sunflower lanyards.

Wearing a sunflower lanyard when you are at Airport is a discreet way for you to indicate to our team that you may need a little extra help, guidance or time with the airport processes. (Airport website statement)

As seen from the above statement, the sunflower lanyard is one of the practical tools used by some airports as part of the HDAP to support their travellers who require additional support and time to simplify the airport process for them. In this paper, the information provided shows that many airports are currently using the sunflower lanyard as an HDAP services. Another airport stated: If you or someone you are travelling with has a hidden disability, you can request a hidden disability lanyard. Wearing a sunflower lanyard when you are at airport is a discreet way for you to indicate to our team that you may need a little extra help, guidance or time with the airport processes. (Airport website statement).

Authors in this study found that in addition to a sunflower lanyard, some airports have sensory maps for passengers with sensory impairments who would like to use sensory facilities at airports. The provision of sensory maps enables interested passengers to decide which route to follow to avoid noisy areas. For example, assuming a passenger completed the check-in process and wished to proceed to the boarding gate through security areas, they could use a sensory map to avoid noisy areas such as restaurants, bars, and ATM machines. One airport stated as follows: Sensory Map - This identifies high sensory and low sensory areas to help you navigate through the terminal. This can help you prepare for additional noise, crowded areas and identify areas where you can stop in a quieter area if required. (Airport website statement)

As explained, the HDAP sensory map contains directions for easy navigation. An image of a sensory map is presented in Figure 3.



Figure 3 Airport hidden disability sensory maps.

Source: <https://www.goldcoastairport.com.au/at-the-airport/hidden-disabilities>

Like sensory maps, during the data collection, the authors in the present study found that some airports mentioned the provision of a sensory room for passengers with sensory disabilities to escape from airport environmental noises, such as loud boarding announcements or the sounds of luggage trolleys. An example of a statement regarding sensory rooms is mentioned below: The way we process sensory input is a major factor in how we participate in our environment. The airport environment can be intense and overwhelming due to the sensory demands (for example, things you see, hear, touch, smell and feel) and because of the processes, such as check-in and security, that we are required to participate in (Airport website statement).

Peterson et al.,⁴ found that passengers with dementia experience challenges due to loud announcements for boarding, security, safety, and check-in procedures. They recommended that airports make such announcements in text. However, researchers in the current study observed that receiving such messages may be difficult for passengers who do not own the necessary devices. Similarly, Budd and Ison⁹ found that one of the facilities it is necessary for airport operators to provide to personalize the experiences of people with an HD is sensory rooms at airports. Researchers in the current study note that it is equally essential for researchers and airport operators to explore passengers' preferences before designing and constructing sensory rooms at airports. An image of an airport's current sensory room can be found in Figure 3.

As part of the facilities included in an HDAP, the present research found that some airports mentioned they use trained guide dogs to help passengers and their families who need help navigating the terminal. One airport provided a statement regarding the use of guide dogs as practical tools: We also have our airport facility dog, Elmo, who will be available at set times to meet and greet customers that may benefit from the comfort of a dog to help guide them through the process if they need it. Elmo is usually onsite between Mondays to Fridays 9am – 5pm however, he does have weekends and public holidays off as he likes to travel himself. (Airport website statement)

Budd and Ison⁹ documented that service dogs could be used to accompany passengers with a variety of disabilities. In the present study, two airports provided information on service dogs for the assistance of passengers who require it. This indicates that providing facilities for passengers with an HD goes beyond human and material resources; it is possible for many airports in the future to adopt the use of guide dogs for HDAPs. However, within the body of the literature, little to no information indicates that the performance of service dogs has been evaluated and found effective. One airport provided an image of their service dog as follows (Figure 4).



Figure 4 Airport facility dog.

Source: <https://www.adelaideairport.com.au/travellers-guide/special-assistance/hidden-disabilities/>

As part of the airport facilities, some airports allow passengers to read an airport “social storybook” for information on navigating

the airport. An example of a statement for a social storybook was provided by one airport: Written social story journeys are designed to assist people in understanding how an airport works and what to expect. The story can help you prepare for your journey. There is a journey story for our domestic and international processes. (Airport website statement)

Cerdan,¹⁰ employing a qualitative method and focus group, investigated an inclusive airport design that is appropriate to passengers with ASD and their families. Cerdan found that the use of a social storybook designed with plain language, containing pictograms and a typical scenario of navigating through the airport enhanced the experiences of families with ASD across their journey. The authors of the current study note that the findings of Cerdan demonstrate that social storybooks may be useful for passengers with HDs beyond ASD. This paper adapted the image of the social story proposed by Cerdan.¹⁰

Figure 5 illustrates a guide for families with ASD to use before undertaking their journey. The storybook depicts travel activities at airports, including arriving at the terminal, check-in, and going through security; these are some of the areas identified as difficult for passengers with many different HDs.^{4,11} However, this paper notes that there is a need for the storybook to incorporate how passengers could claim their baggage upon arrival at their destinations.



Figure 5 Social storybook proposed for families with ASD.¹⁰

The information retrieved from airport websites sampled in this study indicates that the social storybook is one of the practical tools provided by some airports to assist their passengers. However, some passengers with visual impairments may find it difficult to read a printed social story. Therefore, to provide inclusive guidance to passengers with all HDs, the social story may be reproduced in different formats; for example, audio book social stories and human demonstration of the social storybook contents may be beneficial. One airport provided an image of its current social storybook as follows.

Figure 6 illustrates the image of typical social storybook; the lived printed social story book contains information regarding how to access passenger activity at the airport. A passenger with an HD could download it from the airport website. However, the authors in this paper observed that the information provided currently in the book does not cover guidance on interacting with cabin crews, facilities, and other passengers in the aircraft cabin; this means that some passengers may navigate the airport terminal successfully following the use of a social storybook, but be impacted negatively in the aircraft and on the rest of their journey. Therefore, a gap exists which requires the attention of airport operators for provision of aircraft social story to help passengers with HD access aircraft cabin smoothly.

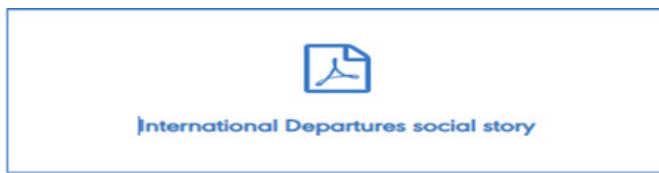


Figure 6 Airport HDAP social story book.

Source: <https://www.goldcoastairport.com.au/at-the-airport/hidden-disabilities>

In respect to navigating the airport, this paper also found that one airport mentioned the introduction of technology in enhancing the travel experiences of their passengers.

Aira is an app that uses technology and human assistance to give those with sight loss the choice to navigate the airport independently. Using the video capabilities of a smart phone or optional video-equipped smart glasses, in combination with Aira's iOS or Android App, passengers are connected to Aira-trained professionals who provide them with on-demand, personalized access to visual information to help them navigate their environment. (Airport website statement)

The statement above demonstrates that passengers with sighted issues who are not totally blind but may have difficulties reading text could benefit from using Aira technology during their airport navigation. According to the airport, passengers who wish to use Aira could follow six steps:

- 1) download it on their smartphone through the Google Play store,
- 2) open the Aira app and choose the prompt "Tap to use as airport guest",
- 3) register with their email address to sign up,
- 4) confirm their phone number,
- 5) click the confirmation link sent to their mobile phone, and
- 6) connect with the airport agent by tapping the phone icon to receive appropriate support during their navigation.

However, the researcher in the current study notes that there is currently a limit to the effectiveness of the Aira technology developed and introduced by this airport; therefore, it is important for researchers to consider exploring whether the Aira facility could help passengers with sighting problem in navigating airports terminal.

Abdolrahmani et al.,¹² describes passengers with sighted problems as those who do not experience total blindness, but who have issues with reading text; their disability is hidden because they often do not use canes or assistive devices. Abdolrahmani et al.,¹² explored the role of transactional voice assistant technology used by sight-impaired passengers navigating the airport's physical surroundings, including arrival and baggage collection, and found that there is a need for the adoption of multi-modal technology through smartphones to achieve seamless navigation by passengers with visual impairments. This means that the introduction of technology like Aira may help to extend the findings of Abdolrahmani et al.,¹² Guerreiro et al.,⁵ provided additional insights into the importance of mobile devices for assisting passengers at airports. They recognize that people with disabilities cannot travel independently without appropriate navigation facilities, and highlighted the urgent need to design technologies such as Bluetooth Low Energy (BLE) beacons to enhance the smooth accessibility of passengers with an HD. In addition to the Aira app, the same airport mentioned the provision of technology that could

be used to allow travellers with an HD to travel confidently without requiring support from an airport or airline agent.

MagnusCards is a fun and free app that can help autistic and neurodiverse people accomplish life skills independently. It combines a proven way of learning with game design to help people prepare for new situations. (Airport website statement)

According to the statement on the airport's website, travellers with ASD and their families wishing to use MagnusCards could download it from the Google Play store to guide them in performing necessary passenger activities such as checking in and boarding. This airport emphasized that it is important for passengers to adhere to step-by-step instructions and review the decks in the app prior to their scheduled travel. While Magnus Cards was proposed for use by passengers with ASD and their families, this paper found that another airport introduced a specialised check-in counter to improve experiences of passengers with sensory issues: Accessible check-in kiosks are available throughout the departures level of Terminals 1 and 3 and can be identified by the navigational keypad located on the right side of the kiosk touch screen. Many airlines offer an accessible self-service check-in option. (Airport website statement)

An example of the accessible kiosk for passengers with an HD is shown (Figure 7).



Figure 7 Accessible check-in kiosks for passengers with a hidden disability.

Source: <https://www.torontop Pearson.com/en/accessibility/check-in-kiosk>

According to the statement of this airport, this facility was designed for ease-of-use by passengers who are sensitive to lights, such as those with ASD, allowing them read the check-in process and instructions. A prior study by Yücel and Polat¹³ evaluated a barrier-free airport for passengers with disabilities at Erzincan Airport, Turkey, and found that the airport provided a convenient check-in counter for people with disabilities, including those with hearing impairments.

Supporting passengers with hidden disabilities

Cooper¹⁴ examined supports required by older air travellers with diabetes, asthma, and hearing impairments. The author found that a lack of implementation of the appropriate supports negatively affected this particular group of older passengers, especially in terms of experiencing long walks and carrying their luggage from curb to boarding gates. Cooper¹⁴ suggested that airport operators should provide facilities such as first aid kits around the airport and trained personnel to support such travellers in navigating the airport. Similar to the study by Cooper,¹⁴ a study by Sullivan¹⁵ concentrated on the provision of appropriate supports through provision of facilities to travellers with chronic diabetes and asthma. The author emphasized that travel stakeholders should not only understand the problems affecting passengers with chronic conditions including asthma and diabetes, but should advise these passengers during their trip planning; for example, passengers with diabetes and asthma may need to know about the annual immunizations they require before the embark on their journey.

Carvalho et al.,¹⁶ evaluated the requirements of airport infrastructural facilities for passengers with reduced mobility through a survey and found that passengers with disabilities face difficulties related to boarding the aircraft. They stated that airport operators must meet the requirements of all varieties of disabled passengers related to their unique needs, both at the airport and in the aircraft. In this paper, the authors suggest that airport management should seek to understand the unique disabilities of passengers prior to the provision of appropriate facilities for enhancing their travel experiences.

Methodology

The data was collected between January and February 2022, in this study, one of the authors scheduled a semi-structured interviews with participants based on their convenience as stated in the consent form and information statement. Interviews with participants occurred individually and online using Microsoft Team (MS-Team). In this paper, the main questions were comprised of, "Have you introduced the Hidden Disability Assistance Program in your airport?" Other questions included "Describe to me facilities you have provided for passengers with HD at your airport?"

Authors used thematic text analysis (TTA) to facilitate data analysis. This is a useful approach in determining which themes are more important and appear more frequently as described in the participants' experiences. The TTA was developed initially by Braun and Clarke.¹⁷ They defined it as a qualitative methodology for identifying, analysing, and documenting identifiable patterns in a data set. They also described it as a flexible method for the interpretation of data. In the present paper, authors adopted the TTA method and facilitated the analysis through six stages: (1) familiarisation with the data, (2) generating the initial codes, 3) searching for themes, (4) reviewing themes, (5) defining and naming themes, and 6) producing the report. NVivo software version 24 was used to facilitate generating the codes and assigning references to the principles and themes through searching words frequency and exploring necessary codes.

Results

Lack of resources

The result of this study illustrates inadequate resources being available to support passengers with HDs at airports. These resources are practical tools, they include special security lanes, sensory rooms.

Airport managers discussed the lack of practical facilities to support customers to improve their experience whilst navigating the airport environment. The majority of participants are aware that travellers with an HD such as ASD, dementia, and anxiety may require special facilities across their journey; for example, when a traveller with ASD arrives at a terminal that is too crowded with passengers and airport workers and features too much noise, it is possible they will require a sensory room to escape from experiencing sensory overload.

We have a huge array of customers. From all walks of life, we are always trying to improve our airport experience for our customers. And I think for will be two things we recognized we didn't have anything to support those customers, Anything practical Anyway, To support customers with disabilities, And there was a pressing need to I think better look after customers through airports travel is a very nerve-wracking thing at the best of times. (Participant)

Participants' comments about the lack of facilities show that successful implementations require airports and airlines to provide relevant facilities that could cater for the need of their passengers. However, these tools are not currently available for most airports.

This is consistent with Chang et al.,⁷ who found a lack of facilities and services for catering to the needs of disabled passengers at airports. Previous studies' findings show a lack of airport facilities to support people with reduced mobility at airports.¹⁸⁻²⁰ Similarly, Small et al.,²¹ focused on the lack of practical tools to support airport passengers. However, participants' responses did not focus on appropriate facilities for passengers at different locations across their journey.

The demand for facilities by passengers with HD varies according to their disabilities. For example, a passenger who experiences arthritis may require mobility assistance facilities such as an electric wheelchair with or without a customer care representative a passenger could have self escort to the check-in areas, boarding gate, and embarking and disembarking the aircraft.

Peterson et al.,⁴ found that walking distance around the airport is one of the challenges affecting travellers with dementia; they suggest providing specialized facilities such as escalators to ease issues with distance. Escalators are an important provision to reduce long-distance movement within or between airport locations; for example, climbing stairs to reach the terminal service desk for check-in can amplify stress to passengers with arthritis or heart disease. While providing these facilities to all passengers with HDs is important, airports may need to consider that travellers with ASD may experience socialization problems; therefore, sharing airport facilities with strangers may pose a challenge to these passengers.

In contrast, while one participant mentioned a lack of supporting facilities for passengers in implementing an HDAP, another participant assured one of the authors of the availability of resources as part of their program implementation. This participant mentioned, "We've got all of our social stories, our sensory maps, and everything like that all those documents that go along with the program."

From the participants' responses, the author learned that many of these facilities are especially valuable for passengers with sensory issues such as ASD and anxiety disorders. Although this is positive information for travellers with ASD, more practical tools may be necessary for passengers with various HDs; for example, passengers with vision impairments may require technologies such as Bluetooth to enhance their ability to navigate the airport, as suggested by Guerreiro et al.⁵ In this paper, passengers with vision impairment are those who are not totally blind but have some sight issues and who may require assistance during their journey.

Future requirements

During the interview conversation, when asked about ways to improve the provision of appropriate practical tools, three participants mentioned the importance of supporting smaller airports with proper resources. Participants believed that providing such facilities could help ensure passengers' positive experiences.

So, I think that's one obvious step and to support some of our regional airports to be able to deliver similar programs, obviously our smaller airports have limited resources. So where we can support them in the future, I think is really, really important. (Participant)

On this issue, participants stated there were inadequate practical tools even at larger airports, so smaller and regional airports are likely to demand more facilities than the busiest airports. It is assumed that larger airports might have some facilities, but participants felt it was important to provide the same facilities to support smaller ones. While airport operators need to consider providing practical facilities to smaller airports, a second participant made a contradictory statement about facilities such as security lanes and sensory areas to allow

passengers to escape from crowds; the participant emphasized that few of these facilities exist. It means there is still a need for more specialized facilities for all passengers.

There's a sign in our security lines and things like that, that allow you to go into a special assistance line. So it just sort of segregates that person from a very busy or general line and therefore they're treated slightly differently and acknowledge that that person requires extra care and attention. So they have special dedicated lanes to go through security. We don't we are looking at providing some sort of, I think end to end travel paths. We have a few of those facilities at domestic terminals. (Participant)

The need for appropriate practical tools should be necessary for the implementation of the HD program. For example, a traveller with a hearing impairment may not necessarily require sensory areas to assist them in navigating the airport; rather, they require clear written information to enable them to navigate through the airport, and prefer to interact with ground staffs who are trained to communicate with them effectively. Therefore, it is possible that staff education and awareness training is more appropriate for enhancing the experiences of a traveller with a hearing impairment than is the provision of sensory areas. A third participant mentioned their future planning to include appropriate facilities.

I guess the next thing that we're going to be focusing on is the sort of infrastructure that we're planning for our terminals. Like I know that at one airport, we're really keen to focus on you know, what we can put into the planning of our future terminals, things like sensory rooms, you know, we're looking at all kinds of things in the accessibility space. (Participant)

The current study's findings correlate with a recent study's conclusions.⁴ Based on passengers' word-of-mouth, this paper documented that airports should consider redesigning their terminals to include more practical tools. They mentioned that these tools should consist of quiet spaces such as sensory rooms to allow passengers to prepare themselves before check-in and boarding activities. According to participants' comments, airports should consider that passengers with an HD should be able to access air transport facilities any time they wish to travel for example, travellers with dementia who often find airport passenger activities stressful should be assured that when they arrive at airports, there exist trained security personnel to make security screening less stressful for them when they are away from their families.⁴

Global consistency of practical tools

During the interviews, one author discovered that facilities such as sensory rooms provided to support passengers are not the same in all airports. During the authors' interviews conversation with participants, the findings show that passengers are not likely to enjoy the same practical tools in all airports. They may continue to face difficulties due to inconsistent facilities to support their journey. Peterson et al.,⁴ found that passengers with dementia encountered several problems due to inconsistent signage for navigating the terminals in the US. Similarly, Harding²² found that a lack of consistent facilities across terminals could cause passengers to experience distress. Authors noted that consistency regarding practical facilities is the same across the UK aviation market. The CAA²³ reported that among 29 airports that appeared in the report, there are eight different types of identification of passengers with an HD in use by airports. This means that in addition to the popular sunflower lanyards, other means of identification comprised green lanyards, blue wristbands, butterfly vouchers, multi-coloured lanyards, assistance lanyards,

yellow lanyards, etc. For example, assume a passenger travelled from Melbourne airport wearing a sunflower lanyard and arrived at an airport in the UK that operates using yellow lanyards. This may lead to confusion and consequently may affect the traveller's expectation of appropriate support.

Future requirements

Four participants out of ten stressed the importance of airports considering end-to-end service support for travellers with an HD and their families as their top priority in future requirements to improve support consistency. One participant mentioned their goal: A key goal for us was establishing a program that consistency from Airport to Airport. So, whether you're traveling from any airport in Australia, you have that same consistent journey throughout that travel experience and you don't feel stressed, or you're overwhelmed by the journey. (Participant)

The statement of participant above demonstrated that airports would like to see their passengers enjoy consistent support throughout their journeys. However, based on the current available information, the HDAP is far from achieving global consistency. In this respect, the second participant recommended: I've been speaking to airports. The intention we've always approached it that the service you get in Australian airport A will be the same service levels you get when you arrive in Australian airport B. And if you left or departed from Australian airport C and landed in Australian airport D, you'd get the same level of service because we're all talking to each other and all our programs to be consistent. I think that's been a really good part of this whole process is that we are all community and it is a collaborative process. (Participant)

The above participant's response explains the concerted effort to ensure a seamless journey for passengers using Australian airports. For example, consider a passenger who signed up for the sunflower program because she was travelling across three airports. On her arrival at the first airport, she checked-in successfully using a dedicated fast-track lane for passengers with an HD to avoid queue and crowds, and was guided by sunflower ground staff through security screening. However, on her arrival at the second airport, while in transit, she finds that the airport is not even aware of the sunflower program. This passenger may feel discomfort while waiting in a queue with other passengers. It is possible that passengers travelling beyond Australian airports also need international consistency support.

The authors found that one participant mentioned they have sensory rooms for people with ASD, but other airports do not. Additionally, one airport stated they offer tour guides to passengers with an HD, but no other airport reported that. Achieving the same level of service consistency within airports is an essential requirement for passengers and service providers.¹⁰

Airport operators require the input of all service providers in providing end-to-end support services, irrespective of their role in interacting with passengers. For example, when a passenger with an HD arrives at an Australian airport terminal, the first uniformed personnel they contact is the airport security officers in front of the departure hall. Such officers are often employed by private companies, providing sub-contract services to airport management, and part of their role includes directing passengers to their assigned terminals. Therefore, their involvement may be necessary in the overall implementations of the HDAP. This shows that airport management must undertake enormous work to ensure services and facilities are consistent within and across airports.

I think the consistency across the country in particular and I think global consistency is always hard, but the consistency across Australia would be a great starting point so that, you know, when somebody departs in Australian airport A and lands in Australian airport B and they have the same knowledge and support on both sides of that journey. Yeah. So I think that made some facilitation from bodies like the Australian Airport Association (AAA) or others perhaps. (Participant)

The responses of the two previous participants shared similarities regarding the need for consistency across Australia. In contrast, other participant emphasized global consistency. However, there must be a universal understanding of the challenges faced by passengers, and provision of the same level of staff training and facilities to achieve national and international consistency of services to passengers.²⁴ Referencing the public transport sector, Aarhaug et al.,²⁵ used surveys and interviews to assess the need for the universal design of public transport for people with disabilities. They found that some transport facilities are inaccessible to passengers, and concluded that there is a need to ensure door-to-door accessibility of transport facilities to people with disabilities before transport operators achieves universal consistency.

Discussion

Participants' responses suggested they recognized the lack of practical tools to support passengers with an HD attempting to navigate through the airport surroundings, which may lead to negative passenger experiences. According to participants' responses, a lack of resources was identified in three broad areas: (1) lack of tools, referring to infrastructure and facilities, (2) lack of funding, referring to monetary allocation, and (3) lack of human capacity for developing the training modules. In comparison, the study of Rady and Abdel Wahab²⁶ identified that one of the issues affecting people with HD is the lack of appropriate facilities to support their journey, specifically at check-in counters. In the current paper, participants revealed that they do not have anything practical to facilitate smooth travel experiences for their passengers with an HD.

Many participants have suggested that provision of practical tools could help airports to achieve successful HDAP implementation. Participant's suggestions match the recommendations of a prior study, which emphasized that the provision of adequate resources is a step toward improving travel experiences of passengers with an HD and their families navigating through airport space.¹⁰ In addition, Graham et al.,²⁷ noted that passengers with sensory problems are more likely to require the use of specialized facilities at airports such as toilets and sensory rooms, which participants of the current study identified as a problem affecting their HDAP implementations. While this research noted the provision of adequate resources for successful implementation of an HDAP are extremely important, it is crucial for airport management who design and develop HDAPs to consider that passengers with HDs have unique needs at airports. For example, passengers with ASD may require sensory rooms to reduce the chances of sensory overload, while passengers with arthritis may require travellers to navigate from the check-in counter, through security, to the boarding gates. Passengers with sighted impairment may require the use of trained service dogs to escort them to the boarding gates and baggage claim upon their arrival. Therefore, to provide an inclusive resource as a complement to the implementation of an HDAP, it is important to seek the input of HD stakeholders in addressing the current lack of resources for improving travel experiences of air passengers with an HD and their families. As an alternative to understand relevant resources needed

by passengers, airport authorities may consider involving all HD unions, organizations, and groups such as Autism Spectrum Australia (ASPECT) and Dementia Australia, as well as academic researchers in the airport's decision-making on issues affecting passengers with an HD.

In addition to discussing the importance of stakeholder participation in the provision of inclusive practical resources, one way to address the lack of budgetary allocation to the implementation of HDAPs is by seeking government support. It is important that federal and state consider special allocation of fund to airports to facilitate support services for people with an HD. The use of assistive technologies may enhance the accessibility of passengers with an HD and may improve the overall HDAP. For example, Campese et al.,²⁸ suggests that airport operators could address the issue of lack of resources for passengers with hearing impairment by providing a "wireless hearing aid" to be connected with a passenger's mobile smartphone; in this way, wireless resources can allow them to receive airline boarding announcements and airport security and safety alerts. Airport operators seeking to implement an HDAP may consider the use of robotics innovations to address the issue of human interaction between passengers with an HD and airport ground service staff who lack training, as suggested by Soonthodu et al.,²⁹

Conclusion

This research provides an understanding of the existing facilities of the airport and its effect on HDAP implementation. Donnelley³⁰ suggested that airport operators should include appropriate signage in airport design to allow passengers to move around the terminal building without experiencing stress. Participants noted that a lack of end-to-end accommodation was one of the issues affecting passengers with an HD. Regarding the need for global consistency of facilities among airports, it is possible the aviation regulatory bodies should propose an international standard for HDAPs for all airports to provide same type of facilities and make it compulsory, as in the case of the IPAOM developed by IATA in 2022.³¹ The findings of the present paper provide more in-depth awareness of the existing facilities available for passengers with an HD at sunflower airports and therefore can be used to guide airports in preparing to effectively implement an HDAP. Authors concluded that currently, HDAPs have not been implemented in all airports; in fact, limited facilities for specific passengers with an HD are only available in a handful of airports worldwide.³² To achieve the desired goal of seamless travel experiences for passengers with HDs, there is need to promote awareness for the need of introduction of the HDAP around the globe.

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Conflicts of interest

The authors declare that there is no conflict of interest.

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