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User Experience of interRAI Assessment Tools in New Zealand

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Abstract

The international residential assessment instrument (interRAI) has been adopted for phased national implementation in New Zealand. It targets people over 65 years who require needs assessment for access to long term publicly funded services. There is limited research on the barriers to adoption for interRAI electronic assessment tools, and none relating to the New Zealand health sector. This research qualitatively explored clinicians' perceptions and experience of using interRAI electronic assessment tools using semi-structured interviews guided by constructs from the Unified Theory of Acceptance and Use of Technology (UTAUT) model [9]. Analysis was conducted using thematic analysis. Three major barriers to adoption of interRAI tools emerged from the research: 1) lack of ready access to individual laptops/computers with consistent network connectivity, 2) need for ongoing training for interRAI assessors, and, 3) lack of understanding of what information is being collected and for what reasons. The growth in aging populations will see greater use of interRAI electronic assessment tools, and therefore more clinicians required to learn and use the technology. Addressing these barriers to adoption is therefore vital.

Keywords:

Health Information Systems; Health Services for the Aged; Geriatric Assessment.

Introduction

Information technology plays a crucial role in ensuring health systems offer the best possible care in a timely way. In New Zealand, the Ministry of Health is encouraging health care organisations to make good use of information technology systems, with the National Information Technology (IT) Board working to ensure proven systems are shared regionally and nationally [1]. The investment in such regional and national systems is directed by the National Health IT plan. A national IT solution supporting shared care planning for aged care is a key priority of the plan [2].

Life expectancy in New Zealand is increasing, resulting in an ageing population, often with complex health problems, placing an unsustainable demand on health care services [3]. The population aged over 65 is projected to grow by 84% by 2026 to 944,000, compared to a projected increase of only 20% for the overall NZ population [4]. The New Zealand Positive Ageing Strategy sets out the New Zealand government's commitment to positive ageing, and recommends that multidisciplinary comprehensive geriatric (over 65 years) needs assessment be available throughout New Zealand [5]. Needs assessment is the mechanism used to determine older persons' level and type of need for publically funded disability support services in New Zealand; the availability of consistent needs assessment supports shared care planning.

In New Zealand, twenty district health boards (DHBs) are responsible for providing or funding the provision of health services in their district. The term "interRAI" is an acronym for "international resident assessment instrument" and refers to the suite of electronic decision support software selected by New Zealand to complete comprehensive clinical assessments for older adults. In 2008, the interRAI National District Health Board Implementation Project (2008–2012) was initiated and phased across DHBs with each DHB taking responsibility for implementation along agreed national criteria; operational funding of $12.509 million was provided to twenty DHBs by Government over four years [5]. In the participating District Health Board, the first phase of implementation occurred in July 2009.

The two interRAI tools implemented initially were the interRAI Minimum Data Set Home Care (MDS-HC) and the Contact Assessment (CA). The CA is a short screener tool containing template areas to answer specific questions designed to interpret urgency, complexity, and rehabilitation needs for an older adult. The MDS-HC is a comprehensive assessment tool comprised of multiple domains including function, health, social support and service use, and Client Assessment Protocols (CAPs) which are triggered areas of need [6]. InterRAI assessments are completed by a trained health professional holding an annual practicing certificate. A structured conversation with the older person is initiated and information from the client is stored using a laptop and appropriate software. The data later synchronizes into one of two national data warehouses. Observations to certain questions are coded by a Needs Assessor, which trigger algorithms in the software to identify risk issues, which are the CAPs. It is this information which is used as a starting point for intervention and/or services to support older adults [5].

There are further interRAI tools planned for implementation nationwide. Understanding some of the critical success factors and barriers of adoption to the uptake of interRAI tools will support this implementation. For example, in October 2012, the Associate Minister of Health announced an accelerated timeframe for the rollout of a further module of interRAI tools into the aged residential care sector over the next two years requiring mandatory participation [7].

Within the literature on technology adoption, there has been considerable research on the benefits of technology; however, more than 40% of information technology developments among various sectors including health fail or are abandoned [8]. One of the major factors leading to failure is lack of understanding of how people and organisations adopt information technology. The knowledge of how and why people who work in health accept and use technology can help designers and enable more efficient implementation of systems.

In reviewing the literature on interRAI implementation, there was little research related to adoption of interRAI assessment tools. Thus, research in this area will provide data to improve training materials and resources to end users, improving current practice and providing benefits to both organisations and end users. Such an outcome would be relevant not only to New Zealand but also to other countries implementing the interRAI.

The aims of this research were therefore to determine:

1. Barriers to adoption of interRAI electronic assessment tools identified by unit/service managers and end users,
2. Organisational support required pre- and post-adoption of interRAI electronic assessment tools.

Methods

Research Framework

This research project is based on the Unified Theory of Acceptance and Use of Technology (UTAUT) model [9]. The UTAUT model is considered by the literature as significantly robust and comprehensive in supporting adoption issues with constructs in performance expectancy, effort expectancy, social influence, facilitating conditions, behaviour intention, and use behaviour [9]. This model is highly validated with multiple studies using the UTAUT model for user adoption; it is more recently the most cited model for understanding technology acceptance [10]. Thus, the UTAUT model provides a useful tool for healthcare managers needing to assess the likelihood of success of new technology being implemented and supports the understanding of drivers of acceptance. From this, healthcare organisations and managers can consider interventions targeted at end users to better support adoption.

Research approach

A qualitative approach was undertaken to complete this research. Semi-structured interviews were completed with unit/service managers and service end users. Thematic analysis was used to interpret the data gathered from the interviews and identification of reoccurring themes noted.

Most technology adoption research, especially in Management Information Systems (MIS), is quantitative. This research yields statistical data that does not connect with end users experiences. However, there is an increasing use of qualitative research methods, especially in studies of Health Information Technology (HIT) implementations. This research adopted a qualitative approach, using interviews to capture the personal views of staff to gauge staff perceptions as a way of narrowing down the specific issues associated with lack of adoption of technology. Polarised views exist on the acceptance of qualitative research. At one end, detractors suggest a lack of generalisability of results due to non-representative sampling with too few cases being sampled. At the other end, proponents criticise quantitative methods for being too statistical and yielding superficial or misleading information. This research was especially interested in the end users views of adoption, and therefore the qualitative approach was seen as the most appropriate. The UTAUT model was designed as a causal model to predict IS acceptance; however, in this research it was used to provide the organizing framework for the semi-structured interviews and for the subsequent thematic analysis. The modifying constructs in the UTAUT model of age, gender, and experience were therefore not considered in this project. As use of interRAI is part of employment conditions for interRAI assessors, voluntariness of use is not a required construct. The UTAUT model was therefore modified for this research project as shown in figure 1.

Data Collection

The research was completed as a student project between August and October 2012 over a six week period. Potential participants were clinicians using interRAI tools working in four healthcare services within one District Health Board. Two of these services (10 staff) were excluded from the sample due to ethical conflicts of the primary researcher. The remaining eleven potential respondents were sent invitations to participate, and five of these potential respondents agreed to be interviewed. Interview questions were aligned with common literature barriers to understanding critical success with uptake of technology. The questions were based on the modified UTAUT model shown in figure 1, incorporating the theoretical framework of factors impacting the usefulness and usability of new technologies.

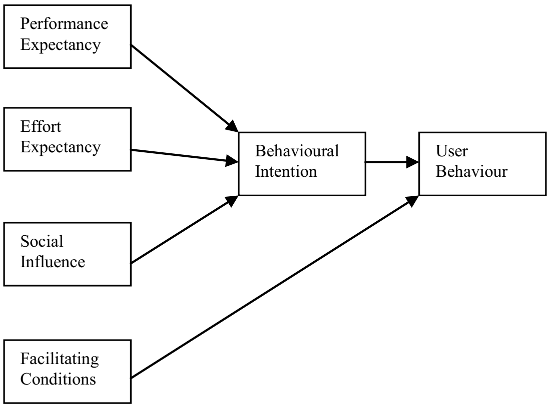

Figure 1- Adapted from the UTAUT Framework [9]

Phenomenology Methods and Thematic Analysis

The importance of understanding how people make sense of the world is the philosophy that underpins phenomenology. The phenomenologist attempts to see things from another person's point of view, believing "…that social reality has a meaning for human beings and that it is important to gain access to people's common-sense thinking and hence to interpret their actions and their social world from their point of view." [11] Thematic analysis can employ an inductive and/or a deductive approach depending on whether it is data driven or theory driven [12]. Deductive thematic analysis informed by the UTAUT model was used primarily in this research as the method for identifying, analyzing, and reporting patterns or themes within the data, as it is one of the most common approaches to qualitative data analysis [11]. In addition, inductive analysis identified some new themes. At a minimum, thematic analysis organises and describes data sets in rich detail [13], and interprets various aspects of the research topic. Thematic analysis is chosen for this research as Braun and Clarke [13] identify this as a foundational method for qualitative analysis that newer researchers might learn from, providing core skills for conducting other forms of analysis. Furthermore, the flexibility that the method provides is considered theoretically and methodologically sound, allowing the themes and prevalence to be determined in a number of ways as long as there is consistency. Another attraction of thematic analysis is the step-by-step guide through the various processes, which ensures robustness and rigour [13]. The study's small sample size meant that the use of sophisticated qualitative data analysis tools was not required, and the robustness of the analysis was supported by a peer review process.

Results

Five semi-structure interviews were completed across two sites with clinicians from a range of nursing and allied health professional groups. All respondents were female, spread across the 30–69 age band, and held practicing certificates from between six to twenty-six years. Respondents had been using interRAI assessment tools from between nine and twenty-four months, and all used computers at home at least three times per week, additional to their other work roles.

Key Findings

A deliberate focus for this research was on the phenomenology approach whereby the lived experiences of the end users were studied to draw out the practical issues related to the lack of uptake for technology adoption. The following section uses the framework of the UTAUT model to present the key findings.

Performance Expectancy

Respondents were asked about the degree they believed the software would help them attain gains in job performance. In many instances strong opinions were expressed, generally stating that the information being collected made sense and that use of the software benefited their role. Also, respondents found that as the software became easier to use, the more it was used. One respondent felt there was no benefit in job performance, but stated it broadened the knowledge base and became "another tool in the toolbox." Another stated "it asks a lot of the right questions and it's nice that it's quite specific and we see the results and that they get services put in at the end."

The respondents who were trained as social workers were uncomfortable with the notion of a "tick box" assessment; their professional training had aligned their thinking and practice to that of collecting the narrative indicating the importance of the richness of detail and rhetoric. Respondents reported "the tick box stuff goes a little bit against our nature...we like to tell a story...bit more difficult to just make a statement." From this we suggest that a person's prior training may impact how they perceive they should use the tools.

One further respondent felt that the software "formalises the process of assessing...and covers off all areas in an interview," but strongly felt the tool was too long, stating "it can be tiring for old people...it's a long tool." This illustrates the importance of technology being appropriate for its use.

There were mixed views on whether the tool and software benefited a clinician's role. Views included, "clients get the services they need," "better than the previous process," "has made me more comfortable with computers," and two of the respondents stated the tools had broadened their knowledge or their knowledge base. Invariably people may have mixed thoughts based on their own prior experience.

On the topic of sharing data more easily, three respondents were clear the data was easier to share. The other two felt the data was not viewed by other clinicians as they had hoped, stating "if you understand the tool then, yes it does [make sharing data easier] but for those people who haven't had training or don't have access to the tool, then it doesn't make it easier." The dissatisfaction was well expressed in the interview implying that others must become familiar with the tools and data to positively influence sharing of the data.

When asked if the software had improved their own performance, several agreed that it had, though each respondent gave varying views on why this was. There were four different clinical disciplines represented in the interviews, with viewpoints on improved performance appeared dependent by occupational registration. Responses gathered included, "makes you think wider about the client's home and social situation," "can identify the issues, gets me what I need," "improves performance to look at different levels of patient needs, helps the thought processes," and "able to better represent the client." Only one respondent felt it did not improve her performance, but stated it did broaden her role. A further comment included that the tool benefited her role as it made her more comfortable using computers. These comments suggest overall there is a relationship between use of the tools and improved performance.

Effort Expectancy

Effort expectancy is associated with the degree of ease associated with the use of the system. Respondents were interviewed in regards to what was perceived as most difficult to learn within the training process, and what was the least difficult.

Several respondents reported the software as unreliable, slow, and plagued with network connectivity problems. Simply having access to a computer in the early stages of learning was the most difficult issue for one respondent who "wasn't savvy, didn't have my own computer so I had to borrow." Another reported the software as "cumbersome with layers to go through," and also "it took weeks to learn and took everybody longer."

A key finding consistent across all respondents related to completing the tools in the scheme of "business as usual" work day pressure in a health system; comments included "it was another task on top of an already busy day, it would brush into my lunch hour," and "it's a long tool, only not necessarily a long tool itself but the follow-on management of what happens when you get the information."

One respondent found problems arose from the need to complete both the on-line version of the tool and a paper copy of a referral application. The respondent stated "I've actually reached breaking point, I can't do my work, plus all this paperwork." Once this was identified as a barrier changes were implemented that reduced any burden of duplication. The importance of using processes that made sense to the user was evident.

Mixed views were given about the least difficult function to use with the system. One respondent cited that it just took three or four assessments before "it clicked," with another citing "having all the information there and accessing it quickly," and another "generating what needs to be actioned," "generated decision support areas of the application, a single source of information," and being able to "write into the software" to document the narrative therapy. Generally, it appeared difficult for the clinicians to specifically identify any ease with using the system initially. However, this reinforces the notion that practice makes using software and technology easier. A perception drawn from this section indicates the degree of ease using the system correlates with access to an individual computer and a high level of connectivity reliability.

Social Influence

Social Influence considered the degree to which an individual perceives that important others believe he or she should use the new system. The questions that related to social influence and collegial pressure consistently found a good level of support from both management and colleagues to use the software.

Facilitating Conditions

The final set of questions related to the degree to which an individual believes that an organisational and technical infrastructure exists to support use of the system. Questions asked included those related to managerial support, access to software champions, laptops, and information. The final question asked interviewees about "what to change"? All respondents identified positive experiences with support from management and access to software champions, although initial problems existed for two respondents around hardware access. One of these has now received access to a laptop stating "it's down in my area so I can just go and...shut myself in the room and use... I won't get interrupted... makes it much easier." Another respondent stated that whilst there was access to a laptop and their own personal desktop computer, "I'm still gathering the information on the hard copy and bringing it down...I'm still double handling...but less and less do I have to write." Training and helpdesk support from the Lead Practitioner and Systems Clinician for end-users were significant. Training and support has a major impact on the experience for the end user of interRAI systems.

There were no reported issues with access to software champions. This, and collegial help offered by peers, was a significant contribution to the clinicians' positive feelings about their experiences.

When asked what they might change to improve adoption and uptake for others, respondents felt access to consistent connectivity was important. Also, they suggested, the use of lighter-weight technology such as 'tablets,' and additional staffing numbers to support the longer process that use of interRAI tools created compared to the previous system.

Unexpected findings

One issue that emerged from the transcripts related to confusion over why the data were being collected. One clinician found it difficult to understand what use the data had and what it would be used for longer term. This related to the service being provided for their local community stating "the tool itself doesn't change, you ask the same questions every day, be nice to know what we are doing with it," and additionally, "what happens with the information." In another interview, the respondent was confused about the need to collect so much data and about the purpose the tool had in their service. The respondent stated the tool was too long, tiring older adults and that this level of data collection was unnecessary. This illustrates a potential gap in the training process, less connected to the use of the tool, but rather to the data the tools generate.

Discussion

The aims of this research were to determine the barriers to adoption identified by clinicians when new interRAI electronic assessment tools are implemented and to assess the level of organisation support required pre- and post-adoption of interRAI electronic assessment tools.

A salient finding was the importance of support at a number of levels including access to the technology, addressing connectivity issues, continued 'help-desk' type support, and information related to the use of the tools. Ensuring continued connectivity was seen as critical to reduce anxiety and frustration for busy staff.

The barriers to uptake included lack of access to laptops to use the software, ongoing technical issues of connection to the software, and lack of knowledge of the outcomes of using the software. The tools were perceived by clinicians as useful and the research has found no issues regarding the level of organisational support training or help-desk support. Quite the opposite was found, with overwhelmingly positive feedback towards the respondents' own management and organisational support, and the training support provided through a service of the District Health Board.

While several of the respondents did identify they were expected to use the technology as part of their position of employment, it is important to move beyond any assumption that technology is part of any job expectation today. Wherever technology or software is implemented, full support and understanding for learning the software must be accounted for to ensure appropriate budgeted resources. A key recommendation arising from this research for the successful adoption of interRAI tools is the need to ensure that sufficient training and support is provided early in a person's learning curriculum. Ensuring that the use of the assessment tools is not added as another task to an already stretched workload was a key issue raised by several respondents and is a critical success factor to encourage adoption and uptake.

At an individual level, effective adoption may be enhanced through the training program and assignment of individual laptops to clinicians. At an organisation level, it is important to provide adequate staff training, making adequate resources available, including access to laptops when staff requires them, and to ensure that connectivity issues are resolved. A further recommendation would be encouraging use of small and light weight devices to run the software. These can be carried as an everyday operating tool, rather than transporting laptops and their required cords and equipment between staff offices and clients' homes and back.

A lack of understanding exists around what information is being collected and the reasons for the data collection. This confusion is shared by the Needs Assessor and by those who share data arising from the assessment process. This again points to the need for sufficient training. However, as the information arising from the assessment may be used in shared care planning, this training needs to be extended to include end-users of the assessment information itself.

Limitations

While the sample size in this research is small, and theoretical saturation may not have been reached, the number of respondents accounts for twenty percent of current users of interRAI technology in the District Health Board. Eleven invitations to participate for this research were distributed with a response rate of 45%. Though limited in size, merits include the richness and depth of the interview transcripts with considerable similarity in responses receiving adding weight to the validity of the standardised questioning. Qualitative research in itself is less based on statistical analyses and is appropriate with small sample sizes, due to the "richness" of the data [11].

A key sample group that was unobtainable for the purpose of this research was the ten additional clinicians who regularly access and use the interRAI technology. The student researcher is currently employed in a position of management for this group, creating an ethical conflict requiring their exclusion from the research project.

The project was undertaken as a student research project; thus, time and resources limited recruiting a larger sample size, such as one drawn from other District Health Boards. In addition, this precluded mitigation of the above ethical conflict by the co-authors interviewing these clinicians. Such further research is planned as future work.

Data collection and how this was used on an individual and aggregated level by the users was outside the scope of this research. Future research may wish to consider how the data can be shared systematically, and how known health issues are addressed for the clients when an interRAI assessment has been completed.

Conclusion

Three major barriers to adoption of interRAI tools emerged from the research: 1) lack of ready access to individual laptop/computers with consistent network connectivity, 2) need ongoing training for interRAI assessors, and, 3) lack of understanding around what information is being collected and for what reasons. The growth in aging populations will see greater use of interRAI electronic assessment tools and therefore require more clinicians required to learn and use the technology. This small project has identified some potential barriers to the adoption of the interRAI tools. Further research with a wider pool of respondents is needed to confirm these findings and to identify specific recommendations to ensure the successful adoption of these tools in the future.

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