Dysphagia assessment and intervention: evaluating inclusive approaches using video

Susan Guthrie and Jois Stansfield

Abstract

Purpose – *Dysphagia experienced by adults with mental health conditions and/or intellectual disabilities (IDs) has been well-reported. However, accessible and inclusive assessment measures to identify and monitor for deterioration in dysphagia are very limited. The purpose of this paper is to explore the use of video to enhance inclusion in dysphagia assessment and intervention for an inpatient setting.*

Design/methodology/approach – *This service evaluation involved adults with IDs and mental illness living in in-patient accommodation and their multidisciplinary team. Participants were invited to film and then reflect on videos and their comments were transcribed for qualitative analysis.*

Findings – *In total, 42 adults gave consent to film, review and discuss mealtime video-clips. Staff feedback was invited. Thematic analysis was conducted for service-user and staff comments. A global theme of "involvement" was identified from the data analysis, with sub-themes of "enhancing participation, insight and incentive". An additional global theme "clinical benefits" resulted from staff comments. This included sub-themes of breadth of assessment, shared working and outcome measures.*

Research limitations/implications – *Limitations included refusal of video by people with heightened anxiety but these were a minority. Most people showed enthusiasm and enhanced engagement. Practical issues were resolved regarding governance.*

Practical implications – *Video offers a dynamic record of muscle tone, coordination, mealtime experience and individual context benefiting both service-user and staff practice. It stimulates insightful discussion of outcomes and supports the inclusion of service-user perspectives. Further research is indicated to develop a greater understanding of dysphagia in this population. Inclusion of service-users in planning and managing safer mealtimes may be enhanced through the sensitive use of video.*

Social implications – *This evaluation suggests opportunities for improving inclusive approaches for service-users using video to promote insight.*

Originality/value – *Further research is indicated to explore the nature of dysphagia in people with mental health conditions using video as a dynamic and unique resource.*

Keywords *Intellectual disability, Inclusion, Outcome measurement, Dysphagia, Person-centred approach, Mental disorders*

Paper type *Conceptual paper*

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1. Background

Dysphagia has been described simply as eating, drinking and swallowing difficulties (RCSLT, 2018). For people with mental health conditions and/or intellectual disabilities (IDs) the experience of swallowing difficulty is often exacerbated by other mealtime stresses from psychological, behavioural, social or environmental factors (Ball *et al.*, 2012; Chadwick *et al.*, 2003; Guthrie and Stansfield, 2017). The prevalence of dysphagia in adults with mental health conditions has been the focus of recent reviews (Aldridge and Taylor, 2012; Cicala *et al.*, 2019; Kulkarni *et al.*, 2017b; Walsh *et al.*, 2007) but this physical health issue remains an area of concern for this population due to lack of awareness, under-diagnosis

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and poor reporting of related incidents such as choking (Guthrie *et al.*, 2015; Jones *et al.*, 2008). The consequences for adults with dysphagia and mental health conditions who also have a diagnosis of IDs has been highlighted, with concerns raised around premature death from dysphagia related respiratory conditions and difficulties accessing diagnosis and treatment (Glover *et al.*, 2017; Heslop *et al.*, 2013).

1.1 Inclusive approaches

Consideration of assessment measures to identify dysphagia which are both accessible and inclusive is very limited in the literature. Service-user involvement in assessment or intervention is rarely described in dysphagia studies for this population. Adults with mental health conditions may have difficulty focussing during an assessment, sharing their concerns or following recommendations. Their awareness of symptoms of dysphagia may be reduced if these are long-standing in nature or changing very slowly (Aldridge and Taylor, 2012). Similarly, adults with IDs may struggle to remember and to communicate their experiences and to express any concerns around swallowing (Chadwick and Jolliffe, 2009). In addition, the clinician may have limited understanding or awareness of the rewards and social impact of the mealtime itself for the person and the wider family or caregivers. Dual diagnosis mental health condition and IDs exacerbates these difficulties. For people living in long term residential accommodation, assessment of long-term dysphagia may be difficult due to the tendency for care-staff to be transient (Chadwick *et al.*, 2003; Crawford *et al.*, 2007). As a result, detailed clinical history and information about mealtime cultures and preferences may be scant or difficult to obtain.

1.2 Use of video/photo

For most people, picture and video images offer a powerful and stimulating means of communication beyond words (Burford and Jahoda, 2012; Rojas and Sanahuja, 2012) offering an insight into their opinions and reactions (Booth and Booth, 2003). Horsfall *et al.* (2018) describe using photo-voice approaches for people with mental health conditions, with this method placing the participant as the expert in the analysis of their own life and experience. It supports critical reflection on the everyday experience and informs on priorities from the person's own perspective.

Video is well documented as a tool for supporting understanding in ethnographic studies (Lomax and Casey, 1998; Pink, 2013). The value for supporting people who have limited insight, reasoning and communication skills is evident. Video approaches are beginning to be more widely considered in research into effective communication therapy interventions (Burford and Jahoda, 2012; Kagohara *et al.*, 2013; Regina Molini-Avejonas *et al.*, 2015) and health care generally (Shaw *et al.*, 2020). Indeed, tele-health care has seen rapid expansion due to the COVID-19 pandemic bringing live video consultations and assessment to wider populations than previously and offering an opportunity for evaluation of tele-approaches for people with dysphagia and other conditions (Brodsky and Gilbert, 2020; Soldatova *et al.*, 2020; Strohl *et al.*, 2020; Wind *et al.*, 2020). Burford and Jahoda (2012) suggest that reviewing videos of oneself can capture interest and offer a more active and inclusive role leading to improved understanding of the person's point of view by the therapist. Crawford (2006)'s report suggests that some speech and language therapists (SLTs) are using video as part of dysphagia assessment with adults with IDs but there is no further detail of how and when this is used. However, no research has been located exploring the use of video recordings for adults with mental health conditions and/or IDs with dysphagia.

1.3 Access to technology

Since the report by Crawford (2006), technological hardware and software have developed rapidly (Jewkes and Reisdorf, 2016) with information and communication technologies (ICT) now routinely used at home, work, for leisure and education. Home produced video and

"selfies" are now part of everyday social media use for the majority of people in the UK (McKean and Bloch, 2019). A systematic review by Kagohara *et al.* (2013) considers the use of iPad® and similar technology with a particular focus on teaching and education in individuals with developmental disabilities. Further advantages and opportunities offered by technology in rehabilitation post-stroke include the use of applications (apps) for the rehabilitation of motor skills, aphasia, also leisure and social uses (Ameer and Ali, 2017; Chen *et al.*, 2019). Ameer and Ali (2017) comment briefly on the camera function of iPad® for ongoing feedback and recording of progress but there is no mention of mealtimes or dysphagia. The value of saved video footage is described by Bloch and Tuomainen (2017) – it allows repeat viewing by the therapist and/or patient. They also suggest that it can offer useful and reliable opportunities for SLT assessment and intervention with some conditions (Bloch and Tuomainen, 2017).

For assessment and diagnosis of dysphagia, the use of video in video-fluoroscopy is well-established, with clear protocols for use and analysis by clinicians (Martin-Harris *et al.*, 2008; Rosenbek *et al.*, 1996). However, video-fluoroscopy remains limited in focus as it takes place outside the usual mealtime environment and lacks wider information and understanding regarding mealtime context, environmental factors and quality of mealtime experience. All these aspects contribute to service-user safety and comfort at mealtimes (Guthrie and Stansfield, 2017; Leslie and Crawford, 2017) and should inform dysphagia assessment and intervention. Murray (1999, p. 196) advised, "the patient should at the very least be shown salient snippets of the video recording. A well-informed patient is more likely to comply with recommendations" and he adds that involving carers or family in viewing may also be appropriate. However, the involvement of service users and carers in viewing video-fluoroscopy footage is rarely described in the literature (Ameer and Ali, 2017). Generally, other published research around video for dysphagia intervention is focussed on tele-swallowing approaches and the use of live video link (Bidmead *et al.*, 2015; Brodsky and Gilbert, 2020; Regina Molini-Avejonas *et al.*, 2015). Here, the patient's role appears passive and the assessment is detached from the usual mealtime setting (Bidmead *et al.*, 2015). Ward *et al.* (2012) suggest that patient report can be included in the remote video assessment, but the nature and details of involvement are unclear. A study by Kantarcigil *et al.* (2016) evaluated inter-rater reliability in the use of video for mealtime assessment comparing remote and face to face clinicians' perspectives. This study did not include the use of video footage to support conversation with the person about their mealtime difficulties (personal communication with Kantarcigil). A review of tele-health (Malandraki and Kantarcigil, 2017) highlights the current focus on the use of video from the clinician's perspective for adult and paediatric caseloads and apps for more inclusive dysphagia rehabilitation in certain populations. No mention of people with IDs nor mental health conditions has been located in any of these papers.

This paper explores the potential for use of video images to extend the photo-elicitation approaches described in the earlier studies above and evaluates the use of video to support assessment and conversations about dysphagia.

2. Service evaluation

2.1 Aims and objectives

The aim of the project was to explore and evaluate the use of video clips in dysphagia assessment and intervention from the perspective of service users, ward staff and SLTs using an iPad® tablet.

The objectives were:

- To consider practical issues for using iPad® video including procedures for consent, safety, confidentiality and governance.
- To evaluate the potential for direct use in dysphagia assessment and interventions.
- To review the potential for indirect use in professional discussions, staff support and training.

2.2 Method

This project was conducted as a service evaluation over a 36 month period, in agreement with the local NHS Trust Research and Development Department. Qualitative approaches were appropriate as this is an unexplored area; the information we sought was sensitive, complex and based on specific contexts from the personal perspectives of the participants. Credibility and trustworthiness of findings were discussed with service-user networks and staff fora to ascertain transferability to inform clinical practice and shed light on service-user well-being (Creswell and Creswell, 2018; Ritchie *et al.*, 2014).

2.2.1 Procedure for Objective 1. The project evaluated the use of iPad® video including video filmed by either SLTs or service-users themselves as "selfie" videos. There had been considerable hesitancy about introducing iPad® and video onto the wards from nursing staff and managers who expressed concerns regarding security in this forensic population. Historically, issues and alerts at neighbouring Trusts had left a legacy of reluctance to consider allowing technology and potential internet access onto secure units (Champion and Edgar, 2013; Fallon *et al.*, 1999). However, the need for service-users with IDs to become familiar with technology in readiness for safe and integrated resettlement into the community was understood (Coates, 2016).

Following NHS guidance (NHS England, 2016) and local clinical governance protocols, the SLT service had worked with the local IT department to design and create a protocol for using video with robust systems of consent and confidentiality. An accessible (easy read and pictorial) consent form was drafted on paper; the format was discussed and agreed with service-users, clinical governance and nursing managers.

The protocol in place required the following governance measures to be addressed:

- The internet function of the iPad® was disabled during the time on the secure inpatient units using the "greyed out" option (i.e. restricted and guided access protected by PIN number).
- The iPad®s were individually password protected and software was regularly updated following local IT protocols.
- IT Hygiene protocols were carried out by the SLT before and after use by each service-user as recommended by Cann (2017).
- Secure unit supervision and risk protocols required that the iPad®s remained within arm's reach of the SLT at all times.
- Service-users were able to scroll across their own video clips only using an individual album setting to exclude the potential to view others.

The iPad® 64GB had been selected as a preferred option providing an easily portable video camera function using the folding case as a stand. This was considered a less intrusive option than a traditional camera and tripod and offered excellent video facility with ease of use to record and review. The symbols (icons showing "delete/dustbin", "play" and "pause") and screen display were accessible and generally familiar. This model also offered a larger screen, high definition camera and the best storage capacity available at the time.

The iPad®s were signed in and out through the secure reception areas before being taken into the secure wards. There continued to be an ongoing discussion of risks with ward staff to reassure them and to promote their engagement with the project. At this time, the nursing staff were also developing a wider policy for the safe use of technology led by the local risk manager. Further security measures were in place including encryption of iPad®s allocated to individual clinicians. The IT department had the capability to conduct remote wiping if an iPad® was lost (although this did not occur) and the confidential storage system using

on-site hardware ensured there was no need for cloud storage. At the time of the project, the use of cloud storage was not considered adequately secure (as advised by the local IT department).

2.2.2 Procedure for Objective 2. Following referral for dysphagia assessment, 47 service-users had been offered the opportunity to participate in iPad® video recordings to accompany the usual mealtime assessment and observation. Explanation and demonstration of the video function on the iPad® took place and the person's consent was sought for each assessment. It was made clear to the participants that they would not be disadvantaged if they declined the video. The dysphagia assessment followed the recommendations of Kelly (2018). Service-user comments and feedback on the video clips were transcribed verbatim during the one to one SLT sessions.

2.2.3 Procedure for Objective 3. At the end of the 36 month trial of the video procedure, the staff were also asked for comments and feedback using a short survey requested by email. The survey questions are available from the authors.

2.2.4 Participants. Service-user participants were adults with IDs and mental health conditions living in long term residential (in-patient) accommodation and those preparing for a transition to supported community accommodation. The setting included medium and low secure forensic wards for adults with IDs, the majority (75%) with an additional diagnosis of mental health condition and detained under UK Mental Health Act section. All participants were referred for SLT assessment for suspected dysphagia, near-miss choking incidents or for behavioural mealtime difficulties. As all participants were residents in a specialist hospital, which supported people with these conditions, assessment of cognition and mental health status had already been carried out with ongoing annual reviews and updates of communication profiles. All potential participants had the capacity to make an informed decision about consenting to be videoed for assessment and for further discussion with the SLT. Some participants also had the capacity to agree to the use of footage for wider training of staff. Capacity was assessed and agreed with each individual and was also confirmed by a discussion with the person's multidisciplinary team at ward round.

Staff participants were those who worked directly with the service-users. Staff participants included SLTs, occupational therapy, nursing, psychiatry, psychology and direct support worker staff.

Due to the specialist nature of the setting, no further details of participants are described to preserve anonymity.

2.2.5 Consent. At the time of the dysphagia assessment, the video procedure had been described and demonstrated before confirming consent from each service-user. The delete symbol was made clear to participants and options for use of video were offered: each participant was offered either immediate deletion of video; retention of recording for SLT and self-review; or retention of recording for wider multidisciplinary team (MDT) review. Consent was recorded either by signing paper consent forms (easy read format with pictures) or by recording the agreement of consent as part of the video clip. Consent was discussed and re-affirmed on each occasion that a video recording was made.

2.2.6 Video procedure. Video clips of meal-times were recorded jointly by the SLT and service-user to assess service-users' presentation when drinking and eating. For these assessments, the iPad® was free-standing, placed at the side of the dining table for the mealtime clips filming with the back camera to capture the face and neck at 2/3 or $^{3}/_{4}$ angle. The service-user was thus between 0.5 and 1.5 m distant from the back camera. After the meal finished, the service-user was then invited to hold the device set onto the front camera (selfie) setting for recording facial tone and movements. Immediately after the recording(s), the service-user was invited to review the video clip(s) and to delete any as they wished. No specialised lighting was used to retain an informal setting. When required the curtains were drawn (for example, in the case of strong sunlight from behind) and

overhead lighting switched on, this was discussed and agreed with the service-user. Video clips lasted between 20 s and 3:02 min duration and the number of clips per participant ranged from one to seven, to capture a range of tasks during the dysphagia assessment session. They were saved into the secure storage system in place at the hospital.

2.2.7 Feedback procedures. Service-user and staff comments were included in this evaluation. Service-user comments were invited during the reviewing of the video footage and at the end of each session. Prompts for comments were offered by the SLT using open questions such as "what do you think"? using an informal conversational style. Service-user comments were anonymised by the first author and coded in the format "SU" with a number indicating the different individuals.

Staff comments from the survey and any spontaneous feedback offered were included in the thematic analysis and coded to show their role in the MDT. The numbers indicate different staff members. Any verbal comments from the staff made at the time of recording or reviewing were also transcribed and classified according to origin by the first author. They were then anonymised.

2.2.8 Analysis Thematic network analysis (Attride-Stirling, 2001) was applied to all data. The first author derived basic themes from the participants' comments following Attride-Stirling's protocol (2001) in consultation with the second author. These were then collated into organising and global themes in discussion with SLT colleagues and presented for discussion at service-user groups, SLT peer supervision meetings and local managers' groups. This gave confidence in the trustworthiness of the final themes which emerged.

3. Findings

This evaluation included service-users who ranged in age from 25 to 92. Three service-users declined and two others agreed initially but then asked to delete the video during the assessment session. SLTs then continued with full standard dysphagia assessment in the usual format (Kelly, 2018). The remaining number of people agreeing to participate in a video recording was 42 (32 male). They were all able to communicate verbally in short phrases or sentences. Their cognitive ability ranged from moderate to mild levels of ID as assessed by the MDT on admission to the wards. There were no visual or hearing impairments identified. Additional diagnoses included mental health conditions (schizophrenia, bipolar affective disorder and dementia), autistic spectrum disorders, cerebral palsy and acquired brain injury. All participants were able to eat and drink independently and were recorded sitting in their usual dining area or lounge. Individual details and difficulties are not reported to ensure anonymity. A total of nine staff provided feedback comments. In this setting, no family or friends were available to participate.

The number of clips tolerated by the individual governed the length of the assessment video. Where possible the SLT encouraged the service-user to record varied tasks which included footage of drinking, eating different textures, oral movement skills, tongue and facial muscle tone and a snapshot of speech in conversation if interest and consent were sustained. The clips also aimed to compare skills at the beginning and end of the mealtime to record any difference in stamina or fatigue. Most of the clips were of lunchtimes or evening meals, but some were of a drink or snack between meals depending on the time of assessment.

3.1 Response to iPad® video

Initially, some service-users showed curiosity about the iPad® and appeared not to recognise or understand it. One person asked if it was a mirror and looked to brush her hair, another asked if it could continue to see him in another room. Generally, when the camera was placed at one side of the dining table, most participants appeared to

disregard it quite quickly and looked at their meal or the SLT during the recording. Most service-users (88% $n = 37$) showed interest and were keen to view themselves.

The three service-users who declined the offer of recording had moderate physical disabilities and mental health conditions with heightened anxiety levels. One practical difficulty was found in shared dining rooms, where other service-users moved into the frame. In some cases, this meant the recording had to discontinue to maintain confidentiality. Staff supporting the meal-time were varied in their reactions to the use of video in the room with some appearing very self-conscious and reluctant to speak on camera.

3.2 Themes from service-user and staff comments

A global theme of "involvement" emerged from the service-users' comments, the organising themes within this being, "enhancing participation", "insight" and "incentive". A separate global theme derived from staff comments was "clinical benefits" with three organising themes, namely, "breadth of assessment", "shared working" and "outcome measures". These organising themes are presented below with the underlying basic themes (Table 1).

3.2.1 Global Theme 1: involvement. The use of video gave immediate visual information to support the verbal discussion enhancing the participation of service-users who had limited communication and attention, enabling involvement with the assessment process. "Just seeing that I realise how bad I am getting now" (SU 1). The use of video recording as an enduring illustration, lasting longer than a purely verbal description from the SLT, allowed service-users time to observe, to process information and to generate a response. Some service-users had deteriorating mental illness and difficulty concentrating, however the video engaged and reminded them about the topic. The personal nature of the images offered individual and specific stimuli focussing on the mealtime issues triggering interest and spontaneous discussion.

3.2.1.1 Enhancing participation. Comments from the SLTs and staff highlighted that the engagement of the service-user showed improvement in comparison to previous assessment processes. SLT and other staff reported more spontaneous questions from the service-users, more conversation opener remarks "I'm wearing the same t-shirt" (SU 4), and a greater number of reflective comments "that's difficult for me" (SU 3) while looking at the

Table 1 Global, organising and basic themes

Global themes	*Organising themes*	*Basic themes*
Involvement	Enhancing participation	Attracting interest
		Increasing confidence in increasing spontaneity
		Active role/service user-led
		Involvement with technology
		Requests to view/show footage
	Insight	Self-awareness
		Viewing develops insight
	Incentive	Motivation
		Promotes objectivity/detachment
Clinical benefits	Breadth of assessment	Dynamic record
		Capturing wider picture – quality of life and context
		Capturing emotions/distress
	Shared working	Promotes a person-centered approach
		Joint working/second opinion
	Outcome measures	Monitoring change
		Coproduction

video. Service-user examples of confident and more active behaviours in the assessment sessions were seen in requests to show staff their footage, their facial expression (smiling when viewing) and their requests for repeated viewing of the recording. Comments such as "why is my tongue like that" (SU 2) and "my head is all bent over, is that alright"? (SU 1) showed clearly the area of interest from the service user's perspective. SLTs commented that the balance of conversation was changed with the introduction of the video footage: viewing the recording appeared to enable the service-user to take partial control and direct the focus of the assessment. For many, the opportunity to try out selfie options was welcomed. Some were mystified initially and clearly unfamiliar with the concept of the tablet and the camera function "can it still see me in the other room"? (SU 4); but most showed enthusiasm and motivation for using this technology, evidenced by requests to show footage of themselves to support staff and to the wider MDT to demonstrate evidence of their good progress.

3.2.1.2 Insight. Viewing the video and guided by the SLT, service-users watching themselves could offer their ideas about mealtime problems and related concerns. Comments such as "that's me shaking and gulping" (SU 4) were spontaneous and gave a clear illustration of the service user's focus of interest and concern. Another service-user asked, "why does my tongue look all sideways"? (SU2). SLTs commented that this degree of interest and involvement is not usually the case during assessment sessions when typically the SLT leads the conversation. SLTs also commented that the SLT often has to direct attention to aspects of the mealtime in a process of trying to elicit concerns and to understand the service user's experience and difficulties. The visual stimulus of the personal moving image engaged and directed the service-users' attention to strengths and needs. The option to repeat viewings enhanced and clarified discussion around specific areas of skill and difficulty. Showing footage of behaviours such as over-filling the mouth, eating fast, etc. was then recognised by some as a concern "that's a big one" *[*i.e. *mouthful]* (SU11). For others, the video viewing was a tool to clarify SLT advice on safer ways of eating and drinking – viewing prompted further discussion and reminders to self:"[I need to] Take me time" (SU13). Clinicians also commented on this advantage: "[It is useful as] Feedback for those patients with swallowing difficulties, abnormal eating patterns, gorging, etc" (Psychiatrist 3).

Viewing the video supported greater levels of detachment and objectivity in service-users, thus encouraging critical review of self. It prompted reflexivity regarding skills and behaviours – service-users were observed to try out tongue movements using the selfie function, to examine their appearance on screen and to comment on their own risky behaviours such as cramming and bolting food. The portability of the device allowed immediate feedback to the service-user and the care staff. Showing images offered support for recommendations on mealtime management, for example, "could be used as a 'timer' for eating problems e.g. help fast eaters to slow down" (Psychiatrist 3).

3.2.1.3 Incentive. The iPad® using camera function attracted the positive attention of service-users, shown in initial comments such as "what's that"? (SU 6) and "I'm gorgeous" (SU7). In subsequent sessions service-users spontaneously requested further iPad® video recordings from the SLTs. Comments showed that staff and SLTs considered the videos valuable for future assessment and therapy: "inspired by your use of the iPad® I have asked for one; it's so quick and effective to get great images for the service-users" (Occupational Therapy Assistant). Staff also commented that the device attracted attention, and the potential to show change and improvement was highly motivating "these are great, real pictures are so much more person-centred and user friendly" (Nurse 5).

3.2.2 Global Theme 2: clinical benefits. The use of video to capture a comprehensive and dynamic record of movement is a unique way to record and describe aspects of the mealtime. This is difficult to achieve through written or other measurement options. Footage included the recording of tone and function of facial muscles, shape and movement of the tongue, degree of effort and/or fatigue involved in the meal, recording of any involuntary

movements including the presence, extent and quality of any tremor. Staff rather than service-users commented on this, for example, “it’s difficult to describe that sort of the change in words” (Nurse 3). The footage informed multidisciplinary discussions with one nurse commenting: “this aids staff to see and compare results over a period of time as I feel staff who support people day in day out don’t always see this, particularly when gradual” (Nurse 4). This echoed the above comments about detachment and enhanced objectivity.

3.2.2.1 Breadth of assessment. There was further reported benefit with the video being able to capture a record of any distress or other emotions associated with mealtime. The capture of voice, facial expression, the intonation of speech and the language used, informed the SLT assessment giving a depth of information not usually achieved by written transcription of assessment alone. This could then be reviewed with the service-user to discuss and verify the SLT’s interpretation of both verbal and non-verbal communication. On one such shared review, a service-user was prompted to comment on the level of discomfort shown in his facial expression “it [i.e. swallowing] feels like concrete” (SU1).

The videos also had the potential to capture more than the individual’s presentation, offering a record of the general mealtime setting, the noise level and sometimes the atmosphere in the dining room. This quality aspect was not discussed or commented upon by any service-users but was reported to be useful for SLTs and other care staff as it gave context to inform intervention and advice regarding mealtime management. Viewing video footage of dining rooms led to comments by staff: “that’s really noisy” (Nurse 2).

3.2.2.2 Shared working. Video footage was also a powerful tool to inform the MDT. The video brought the mealtime experience into ward rounds showing the impact of dysphagia to clinicians who would not normally visit the service-user during a meal. “For patients with communication problems; [video] pictures support patients to indicate their wants/mood states” (Psychiatrist 3). The video facility to view the service user’s difficulties and illustrate a wider perspective on meal-time environment was received very positively. “Visiting community staff will be able to view this footage as part of their assessments [for resettlement planning], due to difficulties coordinating a visit when the service-user is likely to have a meal and to prevent him from being unsettled by unfamiliar staff” (SLT 2). Footage showing the nature and impact of antipsychotics and other medication on mealtime skills informed debate on medication reviews and treatment generally. A psychiatrist commented: “videos also help us to ensure that meals remain enjoyable social events” (Psychiatrist 1).

The video footage offered opportunities for the SLT to seek support and second opinions from supervising SLTs. The joint presence of two SLTs directly observing a mealtime can be anxiety-provoking for service-users – the video allowed the option for joint discussion of the issues and shared reflection on the assessment without the need for both SLTs to be present at the dining table. This aspect was reported as helpful by SLTs at differing levels of experience. Individual SLTs also reported reviewing the video while writing up clinical notes of assessment findings to further observe and reflect on presentation and to formulate recommendations.

3.2.2.3 Outcome measures. The video recorded the presence of the service-user at meal-time and gave additional information such as distress, emotion, voice quality, nature of cough and changes to breathing, and tone and coordination for facial and oral muscles. These aspects of SLT assessment are difficult to measure and record accurately in a format that allows subsequent comparison over time for quality and severity. This function was recognised by the staff in comments such as “I think the use of IPad® has a huge advantage – you get a true visual representation – which helps to identify specific concerns, progress improvements/decline’’ (Nurse 4). These comparisons (viewing presentation across time) supported discussion with service-user and staff teams to highlight changes in eating and drinking. “I feel staff who support people day in day out don’t always see this [deterioration] particularly when gradual” (Nurse 4).

As the period of the project extended, further video clips were added to the service user's album illustrating mealtimes at different dates and capturing a detailed history of skills and difficulties. Clinicians also commented on the transitional nature of support workers and the difficulties of comparing present with a past presentation, for example, "very helpful clinically, reduces reliance upon our memory and written assessment over long periods of time. Provides a clear record of a person's past condition important especially if patients move are discharged, frequent changes of staff support (high turnover of staff in community services and hospital wards)" (Psychiatrist 1).

The video enabled the service-user to view his or her difficulties, then to reflect and comment on the impact and level of concern he or she attached to these. This led to more informed discussions about desired outcomes between service-users and their MDT. The video footage was also used to support discussion around mealtime risk with both service-users and staff. This was one of the most highly valued aspects reported by staff and SLTs and comments such as "you really see the difference" (Nurse 3) confirmed positive attitudes of staff to use this record to compare against footage taken at other times.

4. Discussion

This service evaluation explored the potential of video and highlighted enhanced involvement of the service-users in assessment and intervention of their dysphagia. The different perspectives of service users and staff were evaluated and combined into the themes presented above. Comments by service-users demonstrated that involvement had improved for most of the participants, particularly in active engagement (seen in the quantity and quality of spontaneous comments and questions prompted by viewing the video clips). The staff comments gave additional insights into the wider benefits of using video clips.

With regard to the first objective, the concerns around practical issues were resolved. Comments from staff regarding security measures (Fallon *et al.*, 1999) were expected but SLTs were able to reassure and demonstrate robust consent and security procedures. Consent was readily obtained in most cases for the video recording and for immediate use for assessment and discussion of risk management. Service-user participants enjoyed showing the footage to their own staff teams, to ward rounds and generally agreed to other SLTs viewing for second opinions. The service-users' cognitive difficulties meant however that few participants had capacity which extended to giving informed consent to wider use of video footage for training purposes. The forensic nature of some participants' histories led to a reluctance to share their personal images beyond the MDT. This is an area with great potential to enhance the wider training of staff and SLTs in dysphagia competency and the management of mealtimes. In other (non-forensic) settings for adults with IDs or mental health conditions, there is, perhaps, greater opportunity to seek consent for using the videos for staff information and training. However, there will remain difficulties in establishing the capacity to give consent for wider use. It is not possible to anonymise the footage due to the need to capture clear images of the face and recordings of speech.

The second objective was to explore the potential for use of video indirect "hands-on" assessment and intervention with service-users. Creating the video allowed each service-user and SLT to discuss, describe and record a wider range of details than previously (for example, about how each perceived the impact of the environment, the degree of impairment in muscle tone and coordination and the level of distress, pain or discomfort). The video was particularly helpful in recording the frequency and severity of difficulties in oral and pharyngeal stages during meal-time, showing the presence of fatigue at the end of the meal. It also gave insight into the nature of any abnormal muscle tone and involuntary movements such as dystonia and dyskinesia associated with antipsychotics (Aldridge and Taylor, 2012; Dziewas *et al.*, 2007; Kulkarni *et al.*, 2017a).The video enabled these to be recognised and evaluated by the service-users through watching the footage. In addition,

for clinical case note recording, the facility for comparison of tone and movement over time is unique to video and allows measurement of change in discussion with service-user and staff – improving accuracy and reliability through shared discussion.

The subjective nature of SLT clinical judgement can be supported and improved by the video record. Bloch and Tuomainen (2017) describe excellent inter-rater reliability for SLTs interpreting video footage using general categories (for interaction and intelligibility). However, the general terms they suggest do not allow for measurement of more subtle change or offer detail on specific motor skills. Dysphagia assessment requires a detailed understanding of muscle tone and coordination for eating, drinking and swallowing in addition to consideration of the context and the service-users' perspective (Guthrie and Stansfield, 2017; Leslie and Crawford, 2017). The added value of video images was commented on by many staff respondents compared to previous formats used by SLTs (such as written text and verbal discussion). Rojas and Sanahuja (2012) comment on the breadth of overview afforded by a video showing the complex personal experience of the individual. SLTs in our evaluation found transcribing video findings (for example, into a written record for case notes) to be difficult in terms of the amount of information that could be captured. Rojas and Sanahuja (2012) similarly describe the limitations of attempting to match text to images. Improvements in electronic notes software will offer greater functionality for attaching videos directly into case notes in the future.

The third objective was to explore the potential for indirect use of the video footage. Sharing footage and service user comments helped staff to recognise and understand the individual service-user's perspective (Rich *et al.*, 2000; Jahoda *et al.*, 2010). The footage gave context to the difficulties observed and allowed discussion of risk mitigation and outcome measures with both service-user and staff, enhancing a person-centred approach (Wildevuur and Simonse, 2015). This resource was also helpful as an accessible resource during capacity assessment about mealtime interventions, informing conversations about risk of choking and supporting shared decision-making.

4.1 Limitations

Ethnographic studies have discussed the potential for video to influence behaviours. The distorting effect of video in the room (Lomax and Casey, 1998) may change or remove usual behaviours. This is acknowledged as a potential influence on the assessment footage but service-user, SLT and staff review of the footage was used to check and inform the conclusions. Bloch and Tuomainen (2017) highlight the emotional stresses for patients with progressive conditions when viewing themselves on video. The refusals of video recording in our project were by service-users who all had greater levels of physical disability, higher anxiety levels and higher cognitive ability and who could clearly indicate their aversion to viewing themselves. Overall, however, very few participants declined the video. The majority of service-users who were videoed agreed to save the video for future review and showed enthusiasm for the footage.

Filming in busy dining rooms meant that there was the occasional intrusion of others into the frame. The assessment continued then either without video or by moving to a separate room. Viewing of images was protected by encrypted storage and restricted through the use of album function. There was some difficulty offering service-users the opportunity to review videos uploaded onto the main system due to limitations in service-user access to computers. However, the short nature of the clips and the large memory capacity meant that the videos could usually be retained on the device. The portability of the iPad® was, thus, an advantage in transporting and sharing the videos.

5. Conclusions

Use of portable technology is an established part of the 21st-century culture – for social, leisure and education or work (Kagohara *et al.*, 2013; McKean and Bloch, 2019; Wildevuur and Simonse, 2015). It was surprising that the iPad® was not familiar to or even recognised

by some service-users, an indication of the isolation of living on long stay or secure wards in line with findings reported by Alzrayer *et al*. (2014). The recommendations of Champion and Edgar (2013) for the Prison Reform Trust, clearly state that education and rehabilitation should include technology for people moving back into community life. The use of video evaluated in this project may be useful to inform and extend telehealth approaches. Advancing developments in technology may in the future allow the use of cloud storage with greater security.

The use of video footage helped both clinicians and service-users to understand and assess the impact of antipsychotic medication by illustrating the changes associated with the medication. The video images of abnormalities and changes in muscle tone and function offered a unique format for recording and describing aspects of dysphagia. Using video in conversations about assessment and treatment can support a wider understanding of the nature of dysphagia for service-user, carer, SLT and other professionals enhancing shared decision-making. The opportunity to compare footage over time and monitor for change was welcomed by the participants. This evaluation focussed on dysphagia assessment and intervention. There is potential to extend the use of video function on portable devices generally, into self-assessment, monitoring and treatment of dysphagia and to conduct research on how software applications may complement traditional approaches. This initial evaluation demonstrated service-user interest and motivation in using video. It suggested opportunities to enhance verbal communication and participation in risk mitigation, to co-produce outcome measures and to enable more inclusive person-centred treatment and care.

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