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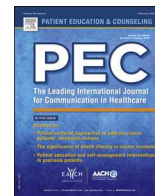
Review article

Acceptability and design of video-based research on healthcare communication: Evidence and recommendations

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ABSTRACT

Objectives: To contribute to understandings about acceptability and risks entailed in video-based research on healthcare communication. To generate recommendations for non-covert video-based research on healthcare communication — with a focus on maximising its acceptability to participants, and managing and reducing its risks.

Methods: A literature review and synthesis of (a) empirical research on participant acceptability and risks of video recording; (b) regulations of professional and governmental bodies; (c) reviews and commentaries; (d) guidance and recommendations. These were gathered across several academic and professional fields (including medical, educational, and social scientific).

Results: 36 publications were included in the review and synthesis (7 regulatory documents, 7 empirical, 4 reviews/commentaries, 18 guidance/recommendations). In the context of research aiming in some way to improve healthcare communication:

- Most people regard video-based research as acceptable and worthwhile, whilst also carrying risks.
- Concerns that recording could be detrimental to healthcare delivery are not confirmed by existing evidence.
- Numerous procedures to enhance acceptability and feasibility have been documented, and our recommendations collate these.

Conclusion and practice implications: The recommendations are designed to support deliberations and decisions about individual studies and to support ethical scrutiny of proposed research studies. Whilst preliminary, it is nevertheless the most comprehensive and detailed currently available.

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1. Introduction

Using video recordings to closely examine how service users and healthcare providers communicate in real life situations can yield important insights about practice [1–3]. Over the past decade or so, evidence from video-based research on healthcare and other service settings has increasingly been used to underpin communication interventions [4–6].

Video-based research approaches to investigating face-to-face communication include: (A) quantitative coding and counting of behaviours and calculating associations between frequencies of coded behaviours and extra-interactional variables such as gender or race [7]; (B) qualitative interpretive analyses focused largely on the content and meaning of individual utterances [8,9]; and (C) conversation analysis which focuses on sequences of communication [10]. Researchers using conversation analysis have generated a significant, rapidly growing body of cumulative knowledge about healthcare communication [2,11,12], work which has resulted in effective training and interventions [4–6,13–15]. The authors of this article work within the conversation analysis approach. Nevertheless, here we address considerations and procedures for enhancing the acceptability and reducing the risks of video-based research on healthcare communication regardless of analytic approach, but which is intended at least to some degree to contribute to improving communication between service providers and users. *Acceptability* is a judgment based on the reasonable anticipation that involvement in a study will not cause harm to participants, that their autonomy will be respected, and that the possible burdens associated with taking part will be outweighed by the anticipated worth of the research. In this study, acceptability is considered from the perspective of research participants (healthcare providers and service users). However, in this study we also aim to consider the full spectrum of risks possibly associated with video-based research, including those of which research participants are not necessarily aware (e.g. because they are not always familiar with some possible ramifications of the use of video data in the ways that researchers are).

A number of specific ethical concerns are raised by the decisions and processes entailed in making and using video recordings of healthcare communication. These arise from properties of video recording and video data, which include the risk that recording might detrimentally affect what people say and do; the ease with which data can be copied and shared and therefore potentially fall into the hands of people who are unauthorised to access it; and the fact that, for adequate analysis, researchers normally need to analyse data in which faces and voices are recognisable (and therefore participants can be identified, and such identification might, in some circumstances, bring harm to the participants). These properties of video data pose potential threats to participant privacy, dignity and safety.

Whilst some guidance about making and using video recordings for research has been published, e.g. [16,17], existing guidance lacks the degree of detail needed for comprehensive research protocol design. Although the specifics of protocol design for video-based research necessarily vary across studies depending on a number of factors (e.g. patient group, type of setting, level of sensitivity of the conversations and activities being recorded, and

others), video-based research design can benefit from a general framework that lays out the key areas where ethical decisions have to be made, the aspects that should be addressed in each of those areas, and what the available options are. This study brings together and synthesises existing guidance and recommendations to provide such framework. Additionally, the study synthesises evidence on acceptability and effects of recording in order to address ongoing concerns about the risks associated with collecting video data in healthcare settings, and with their use and dissemination.

In this paper we report on a literature review that addressed three interrelated questions: (1) Is video recording for research and training purposes acceptable? (2) What risks are associated with video recording? (3) What measures can be adopted to reduce the risks of video recording? We use the results of the review to propose recommendations for the design of video-based studies on healthcare communication. The recommendations are relevant both to people who design and conduct studies, and those who are involved in ethical and governance oversight of research studies. The recommendations concern non-covert research on adults who have capacity to give consent, where the research is for scientific purposes—as opposed, for instance, to market research.

2. Methods

Time and cost constraints precluded a formal systematic review. However, we aimed for comprehensive coverage of relevant publications by employing many of the steps involved in a full systematic review. We searched for publications via multiple sources [18]: the authors' existing knowledge and collections; electronic databases (*ISI Web of Science; Medline; Embase, Google Scholar*); and reference and citation tracking of identified publications. The database search strategy is given in the Appendix. Next, we sifted the publications by reading their titles and abstracts and we included: (a) empirical research on participant acceptability and risks associated with video recording for research and training purposes; (b) regulations and guidelines of professional and governmental bodies; (c) reviews and commentaries; (d) guidance and recommendations. We included literature from fields other than healthcare (including educational and social scientific) where issues that are pertinent for this reviewed are examined (e.g. possible effects of video recording on participants' communication); and literature on making and using photographs of patients and of healthcare activities (these were included because of important commonalities: they involve making and using permanent images of identifiable individuals).

We excluded published guidance and empirical research about video-based research involving children or adults lacking capacity to consent, respondent-generated images (e.g. video-diaries), conducting video-recorded qualitative interviews and focus groups, and recording for purposes other than research and training, e.g. market research or security surveillance.

We designed a customised data extraction form [19], completing one for each publication. Next, we tabulated findings and synthesised them using an aggregative approach [20,21]. Our approach to synthesis entailed working separately on empirical studies to answer research questions 1 and 2 (on the acceptability and risks of video recording) and on regulations, reviews/commentaries and guidelines/regulations to answer question 3

Table 1
Publications included in the literature review.

	Author (year/country)	Study focus	Aspects of video research covered	Main recommendations or findings
	Regulations and guidelines of professional and governmental bodies			
1.	American Medical Association (2003/USA) [26]	Filming patients in healthcare settings (for educational purposes)	• Recruitment and informed consent • Confidentiality • Data storage and data use	• Obtain informed consent before filming whenever possible • Inform patients about the purpose of filming and about associated benefits and harms (e.g. breaches of privacy and confidentiality); inform them that participation is voluntary and that their decision will not affect their care • Inform patients about how the film will be distributed and obtain explicit consent for that • Offer patients opportunities to discuss concerns, and to withdraw consent • Maintain patient confidentiality; restrict access to the video • Store films securely and destroy them after use
2.	Association of Social Anthropologists of the UK and the Commonwealth (2011)[27]	Ethical Guidelines for good research practice (including some references to use of audio-visual media)	• Recruitment and informed consent • Confidentiality • Copyright • Data storage and data use	• Make participants aware of the technical capacities of audio-visual media; participants should be free to reject their use • Follow local norms and regulations • Obtain copyright clearance from interviewees if recordings are to be publicly broadcast or deposited in public archives.
3.	British Sociological Association (2002/UK) [29]	Statement of ethical practice for the British Sociological Association (including references to the use of audio and video recordings)	• Recruitment and informed consent • Confidentiality • Copyright	• Give participants explicit information on the extent to which anonymity and confidentiality will be afforded • Participants should be able to reject the use of data-gathering devices such as tape-recorders and video cameras • Obtain appropriate copyright clearances
4.	British Sociological Association—Visual Sociology Group (2006/UK) [30]	Ethical issues in visual research	• Recruitment and informed consent • Confidentiality • Copyright • Data storage and data use	• Follow local norms and regulations (e.g. the UK Copyright Law) • Give participants explicit information on the status and use of visual imagery in the research, on the participants' own legal rights under national law, and on the study dissemination strategy • Participants should be able to reject the use tape-recorders and video cameras • Where possible, threats to confidentiality and anonymity should be anticipated and discussed with research participants
5.	General Medical Council (2011/UK) [16]	Visual and audio recordings of patients made by doctors for professional purposes, including research and training	• Negotiation of access • Recruitment and informed consent • Data storage and data use • Confidentiality • Recording process	• Obtain specific written informed consent for disclosing recordings from which patients are identifiable; consent must be taken before recording; oral consent is sometimes justified; sometimes, making unplanned recordings can also be justified • Stop the recording when patients request it or if it is having adverse effects • Anonymise or code the recordings before using them for secondary purposes • Follow local law and guidance • The duty of confidentiality continues after a patient has died; patients' wishes should be followed after their death
6.	International Committee of Medical Journal Editors (ICMJE) (2010) [41]	Includes guidelines for the use of identifying material in publications, including photographs	• Informed consent • Confidentiality • Data use	• Identifying information including photographs should not be published unless the information is essential for scientific purposes and the patient gives written consent for publication • Informed consent for this purpose requires that an identifiable patient be shown the manuscript to be published • Authors should disclose to these patients whether any potential identifiable material might be available via the Internet as well as in print after publication • Nonessential identifying details should be omitted • Informed consent should be obtained if there is any doubt that anonymity can be maintained (e.g. masking the eye region in photographs is inadequate protection of anonymity) • If identifying characteristics are altered to protect anonymity authors should provide assurance that such alterations do not distort scientific meaning
7.	UK Royal College of Psychiatrists (1998/UK) [55]	Video recording psychiatric consultations	• Recruitment and informed consent • Recording process • Confidentiality • Data storage and data use	• Inform patients (and ensure patients' understanding) about the uses of the recording; specify the categories of viewers • Request written consent before recording (although verbal assent can sometimes be used); request specific consent for each type of use of the recording • Stop the recording if the patient requests it • Permit withdrawal after the recording; confirm written consent after the recording • Offer the patient the option to see the recording

Table 1 (*Continued*)

Author (year/country)	Study focus	Aspects of video research covered	Main recommendations or findings
			• Store the recordings securely • Ensure that viewers will avoid discussing what they have seen outside the session

Empirical research on participant acceptability and risks associated with video-recording for research and teaching purposes

8. Fatigante and Orletti (2014/Italy) [37]	The process of informed consent in a study of doctor-patient communication in a gynaecological department (with a focus on participants' concerns relating to being recorded)	• Recording process • Acceptability • Confidentiality • Informed consent	Study findings: • The analysis of the consent form employed in the study highlights the rhetorical devices embedded in the written information provided to research participants • In instances where doctors, nurses and patients discussed involvement in the research, the doctors acted as allies to the researcher, reassuring other participants about the non-harmfulness of the recordings (and the research overall) • In the course of the recordings, the research participants voiced their concerns and interpretations about the research process, however they also exhibited unequal opportunities to do so: the doctors appeared to 'master' the research process more, and to entitle themselves to neutralize or minimize other participants' concerns Implications: • Obtaining informed consent at the outset of the study is often insufficient in observational studies • More effort should be put into allowing participats opportunities to discuss the informed consent and other aspects of the research
9. Gordon (2013/USA) [39]	How participants orient to audio-recording devices in a study of family interaction	• Effects of recording	Study findings: • Research participants made references to the recording equipment while being recorded • They incorporated the recording devices into their everyday activities and used them to accomplish identity work, e.g. to portray themselves as cooperative (yet burdened) research participants
10. Hargreaves & Peppiatt (2001/UK) [40]	Acceptability of video recording for research purposes in a hospice	• Acceptability • Effects of recording • Negotiation of access • Recruitment and informed consent • Confidentiality • Recording process	Study findings: • Some patients felt they had not been given sufficient notice before recording • Others did not understand what they were being asked or felt they had not been given enough information • Some patients felt that the camera affected the consultations and others were unable to forget about the camera • None felt that video recording had made the consultation less confidential, and none reported that it had made them feel nervous or less willing to talk Recommendations: • Ensure that vulnerable patients receive more notice than that normally given in general practice • Allow the care staff to exercise a veto on patients' behalf
11. Mondada (2014/Switzerland) [47]	Participants' own use of anonymisation practices while being video-recorded	• Effects of recording • Confidentiality	Study findings: • Research participants carry out their own anonymisation practices in the course of the video recording Recommendations: • Integrate participants' concerns in the management, transcription, and analysis of data
12. Penner at al. (2007/USA) [50]	Reactivity of cameras in oncology consultations	• Acceptability • Effects of recording	Study findings: • Camera-related behaviours in video-recorded oncology consultations happened infrequently • The patients appeared to habituate to the presence of the cameras (contained in cylinders) relatively rapidly

Table 1 (*Continued*)

Author (year/country)	Study focus	Aspects of video research covered	Main recommendations or findings
			• The highest frequency of camera-related behaviours occurred within the first four minutes of the recording • Patients displayed significantly fewer behaviours when the physicians were in the examination room than when the physicians were absent from the room • The authors concluded that "video recording can provide nonreactive means of studying medical interactions" (p. 99) Recommendations: • "A conservative strategy to minimize camera effects in medical interactions might be to have a "warm-up" period at the beginning of recordings, in which the cameras are present, but the video recordings made during that time are not used in the analyses of the patients' behaviours" (p. 114)
13. Speer and Hutchby (2003/UK) [53]	How participants orient to recording devices in communication research studies	• Acceptability • Effects of recording	Study findings: • Participants displayed awareness of the presence of recording technologies but these were not automatically a hindrance to the interaction. Rather, they were bound up in creatively facilitating a range of activities relevant to the setting.
14. Wiles, Coffey, Robison and Heath (2012/UK) [57]	Use of visual data in social research (recommendations based on focus group discussions and interviews with researchers who use visual methods)	• Recruitment and informed consent • Confidentiality • Data storage and data use	• Respondents' status and 'vulnerability' in combination with the nature of the research and the ways that visual (and other) data are used and presented should be key issues in making informed decisions about anonymity • Respondents (whether or not they comprise a vulnerable group) should be given the right to make their own decisions about identification in the case of much visual research that is conducted as this poses minimal risk to individuals • However, where sensitive or personal issues are disclosed there is, perhaps, a stronger case for anonymisation, particularly in relation to vulnerable groups or individuals • Researchers should consider possible ramifications of disseminating the data
Reviews and commentaries			
15. Arafeh & McLaughlin for the US National Centre for Education Statistics (2002/USA) [17]	Video recording for education research purposes (review of literature and legislation)	• Recruitment and informed consent • Confidentiality • Ownership of the data • Data storage and data use	• Allow participants to decide which levels of dissemination of the videos they are willing to authorise (so called graduated model of consent or ladder of dissemination)
16. Lomax & Casey (1998/USA) [45]	Video recording in healthcare settings for research purposes (critical review with illustrations from a study on midwifery postnatal examinations and consultations)	• Validity	• The paper criticises two common views in debates on the validity of video based studies, i.e. that video recording either faithfully represents or distorts social phenomena. The paper proposes and illustrates an alternative framework to analyse how the research process (including video recording) helps constitute the data.
17. Riley and Manias (2004/Australia) [52]	Use of photography in clinical nursing practice and research (literature review)	• Recruitment • Recording process • Confidentiality	The publications synthesised in this literature review discussed: • strategies for ensuring ease of access to participants and equipment • the risk of altering the natural setting • difficulties with recruitment because of the intrusiveness of the method • lack of anonymity for research participants
18. Themessl-Huber et al. (2008/UK) [54]	Video recording GP consultations for research purposes (literature review)	• Acceptability • Effects of recording • Recruitment and informed consent • Recording process	Study findings: • Patients were reported to more likely refuse consent for video recording if they felt they had not been given enough time to make up their minds, if they were worried about other people watching them, or if they felt that video recording would restrict the issues they were willing to discuss • The vast majority of patients felt discomfort at the thought of being video recorded as they felt they would be unable to discuss certain issues • Studies of the actual experience show that most patients who had been recorded felt only slightly or not at all influenced by the video recording or audio recording

Table 1 (Continued)

Author (year/country)	Study focus	Aspects of video research covered	Main recommendations or findings
			• When patients were asked about their views on video recording consultations, those who had not been recorded were much more prone to dislike the idea than patients who had previously participated • Patients refused less often to participate in studies using video recording of consultations than they did in studies using audio recording • There is evidence that some patients may subsequently regret their provision of consent • An analysis of consent forms used for video recording consultations in the US revealed that up to 90% failed to provide patients with adequate information (e.g. about data storage and use) • The length and quality of a consultation was not influenced significantly by GPs' awareness of being video-recorded Implications: • The fact that providing patients with an increased time for consideration has been found to lead to reduced participation rates may lead to researchers continuing to recruit "on the day"
Guidance and recommendations			
19. Adomat (1999/UK) [25]	Video recording in hospitals for research and teaching purposes	• Ethical approval • Negotiation of access • Recruitment and informed consent • Data storage and data use	• Consult participants before commencing the research • Provide clear information (e.g. on lack of anonymity) during recruitment • When filming, avoid interfering with patient care • Plan for how to deal with 'bad' practice captured on camera • Ensure participants' confidentiality; employ security measures for data management • Allow the healthcare staff participants to view the videos
20. Berle (2008/UK) [28]	Clinical photography for use in teaching	• Recruitment and informed consent • Confidentiality • Ownership of the data • Data storage and data use	• Seek consent for both data collection and data storage • Allow participants to decide which levels of dissemination of the videos they are willing to authorise (so called graduated model of consent or ladder of dissemination)
21. Broyles, Tate & Happ (2008/USA) [31]	Videography in patient-oriented research in ICUs (example from a clinical trial)	• Negotiation of access • Recruitment and informed consent • Confidentiality • Recording process • Data storage and data use	• Be sensitive to all stakeholders' interests and involve relatives during enrolment • When filming, avoid interfering with patient care • Allow participants to decide which levels of dissemination of the videos they are willing to authorise (so called graduated model of consent or ladder of dissemination) • Respect modesty and limit dissemination to positive exemplars of clinical practice • Blur participants whose consent was not sought
22. Caldwell (2005/UK) [32]	Video recording team meetings in healthcare settings (recommendations based on an empirical study on team working in elder care, orthopaedics and acute medicine)	• Ethical approval • Negotiation of access • Recording process • Confidentiality • Data storage and use	• Obtain written informed consent from everyone who appear in the video • Fully inform all relevant professionals before starting data collection • Protect participant confidentiality, dignity and autonomy • Integrate researcher and camera into the research setting • Set up the camera in advance, before the recording event • Agree with participants about camera location
23. Corti, Day & Backhouse (2000/UK) [33]	Archiving qualitative data	• Confidentiality • Data storage and data use	• Obtain specific written informed consent for archiving and re-using videos • Restrict access to the data • Anonymise transcripts • There are practical aspects that limit the feasibility of anonymising video recordings • Practices of anonymisation can distort video data, generating validity issues
24. Crow and Wiles (2008/UK) [34]	Anonymity and confidentiality in visual research (mostly using photographs in community research – examples from published studies)	• Negotiation of access • Confidentiality • Data storage and data use	• Anonymisation can raise tensions/dilemmas (e.g. participants' freedom of choice vs. researcher's duty to protect them) • Consider possible ramifications of disseminating participants' images • Participatory research can solve some of the tensions associated with anonymisation
25. Derry for the Data Research and Development	Video research in education	• Informed consent • Confidentiality • Data storage and data use	• Participants cannot be assured of anonymity but their confidentiality can be protected in many ways, such as by restricting access to the video and to personal data (e.g. participants' names and other identifying information)

Table 1 (Continued)

	Author (year/country)	Study focus	Aspects of video research covered	Main recommendations or findings
	Center (2007/USA) [35]			• Seek written informed consent for both data collection and subsequent data storage and data use and dissemination ("two-stage model") • Create the least restrictive informed consent form possible that adequately protects subjects but also encourages broad and appropriate uses of video data • When sharing the video in a corpus, it is important to include adequate documentation about the video (so that future users will know about the nature of the video and how it was collected)
26.	Derry et al. (2010/USA) [36]	Video recording for research purposes in learning environments	• Negotiation of access • Confidentiality • Data storage and data use	• Restrict access to the data • Seek written informed consent for both data collection and subsequent data storage and data use and dissemination • Allow participants to decide which levels of dissemination of the videos they are willing to authorise (so called graduated model of consent or ladder of dissemination)
27.	Gelbart, Barfield & Watkins (2009/Australia) [38]	Video recording neonatal resuscitations (recommendations based on a study on neonatal resuscitation)	• Negotiation of access • Acceptability • Recruitment and informed consent • Data storage and data use • Confidentiality	Procedures employed in the empirical study: • Information sessions were conducted with medical and nursing staff • Deliveries involving non-participating staff were not recorded • Prospective consent was used whenever possible; for urgent deliveries where written informed consent could not be sought beforehand, retrospective consent was used • Consent was not obtained by staff who were rostered to provide clinical care at the time of enrolment • The identification of parents and staff was minimised Implications: • Staff identifiability and accountability for medical errors can affect participation • Informed consent for research involving emergency procedures is often not possible (e.g. emotional distress, power imbalance) • In such cases, there is the need of balancing participant autonomy (and freedom of choice) with the need to collect data in inherently unpredictable situations • There are pros and cons associated with both retrospective consent and prospective consent from potential participants
28.	Jewitt – for the National Centre for Research Methods (2012/UK) [42]	Video recording for social research purposes	• Negotiation of access • Recording process	• Listen to and manage participants' concerns in advance of video recording • Discuss the particulars of the filming process with the participants (including where to position the camera(s), when to switch them on and off, and other aspects)
29.	Kelly et al. (2013/UK) [43]	Use of wearable devices that capture images and allow observation and recording of an individual's health behaviours	• Informed consent • Confidentiality • Data use	• Inform participants about threats to anonymity • Give participants explicit information about data retention, and the possible secondary analyses that may take place • Restrict access to the images to the research team; store the data securely • All researchers who come into contact with the images should be trained and instructed appropriately in correct, ethical use of the data • No image that identifies participants should be disseminated or shared without participants' express consent; faces and identifying features should be obscured in published images • Give participants the option to review and delete images • Images should not be given to participants (the researchers would lose control over their use) • If the images depict any illegal activities, according to national regulations, the researcher may be under legal and professional obligation to breach confidentiality and give data to appropriate authorities
30.	Latvala, Vuokila-Oikkonen & Janhonen (2000/Finland) [44]	Video recording for in psychiatric nursing studies	• Negotiation of access • Recording process	• Familiarise with the participants and the setting before starting video recording • Store the data safely and restrict access to members of the research team
31.	Mackenzie & Xiao (2003/USA) [46]	Video recording in healthcare settings for research and training	• Negotiation of access • Recruitment	Procedures employed in the empirical study:

Table 1 (Continued)

Author (year/country)	Study focus	Aspects of video research covered	Main recommendations or findings
	purposes (with illustrations from a study in a trauma centre)	• Recording process • Informed consent • Confidentiality	• Major stakeholders were involved in planning the protocol and designing the consent forms • The clinical areas to be filmed were shown to the research participants • Meetings were held to answer participants' questions • Control of the video recording process was given to the research participants • Video recording occurred in a limited number of clinical areas (enabling those uncomfortable with the video recording to have an alternative location for providing patient care) • Participants (note: only staff, not patients) signed a consent form for video recording • The video recording was made available for review and erased on request • Participants reviewed and gave written consent for retention of selected "masked" video clips (called "video abstracts") for research purposes • Efforts were made to preserve privacy by using camera angles and tight image border control to avoid recognition of individuals • Only care providers and researchers were given access to the video recordings which were kept secure under two sets of locks • Faces and identifying features were blurred • A sign was placed at the entrance to areas being filmed, warning that filming was underway • Original video records were destroyed by degaussing within 4–6 weeks of collection
32. Mortensen and Hazel (2012/Denmark) [48]	Recording social interaction in naturalistic settings	• Negotiation of access • Recording • Data storage and data use	• Brief research participants about the recording process, issues regarding anonymity, how the data will be stored and used, and whether the data will be shared with other researchers • Decide whether to prioritise the "quality of the recording" or the "quality of the interaction" (in the latter case strategies can be used to impact as little as possible on the setting, e.g. by using small cameras) • Store the data securely
33. Papademas and the International Visual Sociology Association (IVSA) (2009) [49]	Use of visual media and images in social research	• Informed consent • Confidentiality • Data storage and use	• Protect participants' confidentiality, e.g. through removal of personal identifiers • Inform research participants of any limitations to the guarantee of confidentiality at the outset of the study • When deletion or masking of personal identifiers is not feasible, appropriate consent of personally-identifiable individuals must be obtained • Justify the use of identifying information • Give extra care in delivering or transferring any confidential information or communication over public computer networks • Obtain informed consent from research participants prior to photographing, videotaping, filming, or recording them in any form, unless these activities involve simply naturalistic observations in public places and it is not anticipated that the recording will be used in a manner that could cause harm
34. Parry (2010/UK) [2]	Video recording in healthcare research	• Negotiation of access • Recruitment and informed consent • Confidentiality • Recording process • Data storage and data use	• Familiarise with the setting and collaborate with the participants through prolonged presence in the field • Inform participants and give them the option to decide on the level of dissemination of the video • Have the equipment sited to help habituation • Avoid being present in the room when recording • Give participants the option to halt the recording • When showing undisguised data, instruct audience members not to refer to participants by name if they recognise them, and not to talk about them in personal or negative terms
35. Prosser and Loxley for the National Centre for Research Methods (2008/UK) [51]	Visual methods for social scientists (with illustrations from published studies)	• Research design • Informed consent • Confidentiality • Data use	• Provide reasons for incorporating visual methods and techniques within a study and offer a strong rationale for how they contribute to answering the research questions • Ethical decisions should be made in a situated way, taking into account contextual factors ("emergent visual ethics")
36. Wiles et al. (2008/UK) [56]		• Ethical approval • Recruitment and informed consent	• Seek informed consent for both data collection and for subsequent use of the images

Table 1 (*Continued*)

Author (year/country)	Study focus	Aspects of video research covered	Main recommendations or findings
	Use of visual (mainly photographic) data in social research (with illustrations from research projects)	• Confidentiality • Data storage and data use	• Personal information should be treated confidentially and participants anonymised unless they choose to be identified • However, obscuring images for anonymisation purposes can be problematic (e.g. masking informative features such as facial expressions); obscuring faces can also objectify people and remove their identity • There can be a tension between study participants' right to decide how their image is used and researchers' responsibility to inform participants of the implications this might have • In some contexts, it may be appropriate for researchers to take responsibility for the possible outcomes of research and to protect study participants from themselves. Nevertheless, participants' wishes for the use of visual data portraying them should be explored • Inform participants of the extent to which anonymity and confidentiality can be assured in publication and dissemination and of the potential re-use of data • Restrict access to the data

(on how to enhance the acceptability and reduce the risks of video recording) and generate recommendations.

3. Findings

We included 36 publications in our literature review (7 regulatory documents, 7 empirical, 4 reviews/commentaries, 18 guidance/recommendations). Table 1 summarises their characteristics, topical foci, findings and recommendations. In what follows we present the review findings on the acceptability of video recording (3.1), the risks associated with video recording (3.2) and measures that can be adopted to minimise those risks (3.3). Table 2 illustrates recommendations for the design of video-based communication studies in healthcare, which we distilled from the literature. For illustrative purposes, in section 3.3 we also refer to how we employed these recommendations in the design of a study on communication between palliative medicine consultants, terminally ill patients, and their companions, which we carried out in an English hospice.

3.1. Is video recording for research and training purposes acceptable?

There has been little empirical research on the acceptability of video recording in healthcare settings for the purposes of research and training, with the exception of primary care (where recording is frequently used in training and assessment). In this field, there have been sufficient studies for a literature review [54] to have been conducted. Apart from this review, we found just one empirical study that examined participant perspectives on the acceptability of video recording. The latter was a qualitative interview study [40] on the views of 31 hospice patients after one of their consultations had been video-recorded. The vast majority (90%) viewed the purpose–doctors improving their communication skills–as positive, and regarded video recording as a good method for doing so; 97% said they would agree to another recording in future.

The literature review [54] included 129 empirical studies relating to video or audio-recording of primary care doctors' consultations—most of these considered training and assessment rather than research contexts. The review found that when patients were asked about their views on having their consultations video-recorded, when the interviewees had not been recorded they were much more prone to dislike the idea than

groups of interviewees who had already been involved in recordings. Importantly, this suggests that views on this are not stable: when considering recording in principle or hypothetically, patients view it as less acceptable than when they are asked after having actually been recorded.

These review findings show that further research is needed on participant acceptability of video recording for research and training purposes, particularly in secondary care settings. The available evidence, albeit sparse, points to the acceptability of video recording.

3.2. What risks are associated with video recording?

Risks can be grouped into three broad categories – detrimental effects on communication and thus patient care; threats to privacy and confidentiality; and coercion of participants.

(1) *Effects on communication.* A key concern in the literature is that the process of recording might affect detrimentally the communication between clinicians and patients, and thus patients' care [26,32,38,40,44]. Some studies showed that participants orient to and comment on the presence of the camera and the recording activity during their interactions. Speer and Hutchby's study [53] investigated effects of video recording *in situ* via a conversation analytic study of naturalistic video recordings made for research in various settings including child counselling. They showed that participants do not forget about the presence of recording devices, and that sometimes participants refer to them in the course of going about the business of the interaction. Importantly, they showed that people can use the recording process and equipment in the service of activities that are integral and usual for the particular setting. For instance, a child's reference to the recording devices in the room was used by the counsellor to begin a discussion about the child's relationships with her parents at home. These findings are inconsistent with the idea that recording is a neutral medium: non-covert recording necessarily affects the events being recorded to some extent. However, one should not conclude that recording impinges on study validity [45]. Rather, the camera becomes an integral part of the participants' interactional ecology (for similar observations see [37,39,47]); the participants actively make sense of its presence and use it as a resource to accomplish their activities. These findings are compatible with the results reported by Hargreaves and Peppiatt [40]: some of the day hospice patients interviewed

Table 2
Recommendations for good practice in video recording.

Designing the study & negotiating access to the field

Where possible, researchers should:

1. Undertake in-depth discussions and negotiations with all relevant stakeholders–including both service providers and users–[17,25,31,32,34,38,42,46,48] about:
    a. How video will be recorded and used in terms of:
        i. The overall purpose or rationale for the research and particularly for collecting and using identifiable images within it;
        ii. The fact that data cannot be anonymous although steps will be undertaken to protect confidentiality;
        iii. Who will see the data, for what reasons and when;
        iv. Whether aspects of identity will be disguised—for communication research it generally makes sense to disguise audible references to names and places, it may make sense to disguise voices via some distortion, but disguising faces and bodies usually precludes adequate analysis of communication;
        v. How data will be stored, and for how long;
        vi. Available options for recording equipment, such as whether or not tie-pin (or 'lavalier') microphones might be used, how many cameras will be used, and what angles they will aim to capture;
        vii. Whether or not it makes sense for the camera operator to be present in the recording environment;
        viii. Who will own and be the custodian of the data (in the UK this is the research sponsor);
        ix. Whether participants will be given a copy of the recording, and if so whether this would be the full recording, the audio file only, and/or the transcript. If participants will not be given a copy, they should normally be given an opportunity to view the recording;
        x. Naming participants—in some studies it may be appropriate to ask participants whether they wish to be referred to by name within dissemination materials.
    b. Whether data collection could and/or should include healthcare episodes where one or more of the participants can only be approached on the day of the episode itself; this is the case in some outpatient, primary and emergency care settings.
    c. Participants' concerns and views, both negative and positive, of
        i. The overall acceptability of video recording for research purposes;
        ii. Ethical and practical considerations specific to the setting, participants, and the proposed study.
2. Undertake ethnographic observation [2,32,44].
3. Anticipate the possibility that individuals whose consent has not been sought might be captured on camera and manage this [31].
4. Anticipate and plan for the possibility that recordings might capture less than optimal practice [25,30,38].
5. Anticipate and plan for possible long term uses of recordings and their implications [30,34,56].

Recruitment

6. Whenever possible, researchers should approach potential participants well in advance of data collection, so as to give them time to reflect before deciding whether or not to participate [16,38,55].
7. However, some studies entail video recording healthcare episodes where one or more participant can only be approached on the day of the episode itself [16]. In such a circumstance, deliberation on the benefits and risks of doing so may result in judgement that it is both feasible and ethically sound to seek verbal assent before recording and written consent afterwards (so-called retrospective consent) [25,38]. This has the advantage of giving the participants adequate time for consideration after the recording, in circumstances where it is not possible to do so before the recording. In circumstances where one or more participant can only be approached on the day itself [38], the researchers should:
    i. Clearly specify means by which eligibility will be assessed in these acute circumstances;
    ii. Consult widely with stakeholders on what information must be provided to participants prior to recording, and what can be left until the longer informed consent discussions after recording;
    iii. When approaching service users, explain that: (1) the study will be discussed with them in more detail after the recording (though usually not before the following day, so as to give the participants sufficient time to read the information sheet and reflect about their participation) and (2) they will then have an opportunity to either confirm their participation by giving their written consent, or to withdraw—in which case the recording will be erased
8. Researchers should provide verbal and written information that explicitly mentions possible disadvantages of being video-recorded for the purposes of research [25,31,49], including
    i. That recording might have disadvantageous effects on communication;
    ii. That participants may feel uncomfortable and/or self-conscious while being recorded;
    iii. That people viewing the data might recognise the participant, and this recognition could in some way be harmful to the observer or participant.
9. Whenever possible, researchers should provide multiple opportunities for participants to opt out at several points in time—before, during, and after recording.
10. Whenever possible, researchers should ensure that at least one person other than those providing care gives participants opportunities to opt out [38].

Informed consent

Procedures should generally include the following:

1. Provision of detailed information about the study to potential participants as long before recording as is feasible [2,16,30,31,33,36,55,56]. In tandem with this, as much time as possible should be available to them to decide whether to give their informed consent. If planned appointments are recorded, it is likely that the first approach to service users can be made weeks or days beforehand. On the other hand, if urgent or emergency appointments are to be recorded, only a very short notice period will be possible.
2. Seeking written informed consent before, after, or–preferably–both before and after recording [38,55]. Notably, including some form of consent after recording confers an advantage—participants' understandings of the nature of the data collected will be much greater than it can be prior to recording.
3. Seeking informed written consent in relation to *both* the collection of data and its intended uses [35,36,56].
4. Seeking explicit informed consent for the use of identifiable images [28].
5. Providing information in the following domains [2,26,30,31,33,43,55–57]:
    i. How recordings will be made, analysed and stored;
    ii. Plans for disseminating and illustrating findings;
    iii. How long data will be retained and used;
    iv. The extent to which anonymity and confidentiality can be assured in the dissemination phase.
6. Further information about who will or may access the undisguised data and why. At minimum, for analysis to be conducted, participants need to grant the research team such access. However, separate authorisations should be sought if other uses of the recordings are planned [2,17,28,31,33,36]. For these, it should be clear who will access such resources and why — reasons may include enhancing analysis and disseminating findings. Uses of recordings may include:
    i. Showing recordings and transcripts within presentations and discussions involving closed audiences comprising other researchers, other professionals, or trainees;
    ii. Use of recordings and transcripts within training resources;
    iii. Use of still images, usually disguised, in publications;
    iv. Use of recordings for future research projects—information should include whether these will only be conducted by research team members, or by other researchers.

Recording

Researchers should:

1. Arrange, schedule, prepare for, and make recordings in ways that minimise disruption to the setting, the staff, the service users and their care [2,25,31,32,38,46,48].
2. Give all participants the option to halt recording at any point, without having to provide reasons, and make doing so straightforward [2,16,46,55].

3. Limit data collection length and/or frequency in order to reduce the burden to staff organisation [31,32,42].

Data storage
Researchers should:
1. Include within the study protocol explicit plans for efficient and secure transfer of recordings from the collection site(s) to the analysis and storage site(s). Given the rapid development of digital and video technologies, it is advisable to seek expert technical advice at the outset of the study [31–33,36,43,44,46,48,49,55].
2. Ensure every member of the research team understands the conditions under which each recording can be accessed and used [31,43].

Dissemination, reporting and using the findings
When considering showing parts of recordings, researchers should each time:
1. Consider carefully whether doing so is consistent with the aims and objectives of the research [34].
2. Consider how much and in what ways the data will be altered to decrease the possibility of participant recognition (pseudonyms in transcripts, 'white noise' covering pronounced person, place and other references in the recordings, pitch change, face blurring, etc.) [33,34,38,46,49,56,57].
3. Consider participants' modesty and any other sensitivities [28].
4. Inform audience that data are naturalistic and undisguised; instruct them that they should treat the recorded participants with respect when viewing and discussing recordings. Instruct them that if they should recognise any participant, they should not refer to them by name. Warn them that they might come across recorded participants in the course of their lives and to remember that participants are unlikely to know they will have seen the recordings [2,25,55][2,25,55].
5. Warn audiences if the content of recordings might cause distress.

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about their experience of being video-recorded reported that the camera had affected the consultations; others that they were unable to forget about it; but none felt that video recording had made the consultation less confidential, and none reported that it had made them feel nervous or less willing to talk.

Penner et al. [50] experimentally studied oncology patients' and physicians' camera-related behaviours in two clinical settings. They found that camera-related behaviours were infrequent, constituted 0.1% of the overall interaction time, and tended to only occur early within interactions. The systematic review of empirical studies on recording primary care consultations [54], cited in the previous section, found that the vast majority of patients felt discomfort at the *thought* of being video-recorded – they felt they would be unable to discuss certain issues. By contrast, patients who had *actually* been audio or video-recorded felt only slightly or not at all influenced by it. The length and quality of consultations was not influenced significantly by doctors' awareness of being video-recorded. Doctors' performance appeared not to be influenced by recording to an extent that would affect the quality of the consultation.

Although on the basis of these findings it is not possible to exclude the that video recording may havedetrimental effects, at the same time there is no evidence of adverse impacts of video recording healthcare episodes upon participants or the communication between them. This does not imply that necessary precautions should not be taken to make the recording activity as unobtrusive as possible.

(2) *Confidentiality.* The second area of concern involves threats to privacy and confidentiality. These arise because of the inherent lack of anonymity of the data collected and analysed in video-based research. There is consensus that using practices of de-identification such as masking the eye region or blurring faces is impractical, insufficient to guarantee anonymity, and unsound in terms of communication research because in human communication, audible and visual actions are completely interwoven. However, this means risks to participants' safety, privacy and confidentiality [2,17,26,28,31,33,34,36,38,43,49,51,56]. The impact of published and displayed images is generally beyond the researchers' control [34,57] and it can be difficult to anticipate what this impact might be in the future. Most commentators and guidance propose participants should be offered the opportunity to at least view the recordings [25,62], but giving participants access to recordings can carry risks [17,28,38]; for instance, this viewing could in itself cause participants distress. Furthermore, if a participant is given a copy of the recording, this takes any

restriction of access out of the hands of the research team and the ethics and governance bodies that oversee that team [43]. A further dilemma is whether or not participants should be allowed to choose to be identified by name in future uses of the data [56,57].

(3) *Coercion.* The third area of concern is the risk of coercing vulnerable people to participate [50]. Several publications highlight the need for deliberation on the balance between the usefulness of video-research and the vulnerability of the people who might be recorded. It has been suggested that people in urgent and emergency healthcare situations might be particularly vulnerable, representing heightened risk of coercing people into participating [2,28]. Gelbart et al. [38] who undertook research involving video recording emergency neonatal procedures discuss how, in such circumstances, the three principles underpinning valid consent (freedom of choice, provision of sufficient information, and having mental capacity) are compromised. On the other hand, as they show, video recording urgent, unplanned events can be very valuable for research and training purposes—since healthcare activities and communication are both particularly challenging and particularly important at such times. It should not be forgotten that professional participants are also vulnerable in video-based research. This may be reflected in reluctance to expose their practice to scrutiny and can affect recruitment rates [38,54].

3.3. What measures can be adopted to reduce the risks of video recording?

The guidance and empirical research reports we reviewed proposed numerous measures to reduce the risks of video recording. Table 2 provides a summary of the safeguards documented in the reviewed publications. These recommendations apply to non-covert video-based research with adults who are able to participate in informed consent discussions and have capacity to give their consent. We use the term *providers* to refer to both paid and in-training care providers, and the term *service users* to refer to patients, clients and accompanying relatives or friends. On the basis of our literature review, it seems reasonable to conclude that "although the use of [video research] does not create new ethical issues for researchers, the manifestations of these issues may be different" [31,p. 60]. Our recommendations therefore cover aspects that are specific to video-based research and not the wider range of ethical considerations and best practices that apply to research with human subjects more broadly. In Table 2 our recommendations are presented following the temporal flow of the research process (study design and access to the field, recruitment, informed consent, recording, data storage,

and dissemination). In what follows, we illustrate how the recommendations address the areas of ethical concern synthesised in the previous section.

(1) *Effects on communication*. Although there is no evidence that recording has negative impacts on research participants or the communication between them, researchers should undertake steps to make the recording process as safe and unobtrusive as possible [2,25,31,32,38]. Consultations with representatives of prospective participant groups (providers and service users) can help researchers devise procedures for recording in safe and unobtrusive ways [17,25,31,32,34,38,42]. With their knowledge of the research site, these representatives can advise on how to video record in ways that do not disrupt providers' workflow and service users' care. In our hospice study we undertook consultations with representatives of hospice patients, carers, doctors, nurses, and communication trainers; we utilised the insights from these groups to design our study protocol (a report on this consultation process is in preparation). Collecting video-data entails a low level of burden in terms of participants' time if the study involves recording ordinary activities (such as interactions between providers and service users), which would be taking place anyway (as opposed to research generated, e.g. interviews). Where sufficient resources are available, ethnographic observation and/ or prolonged presence in the field prior to recording can help research participants get accustomed to the presence of the researcher and the recording equipment [2,32] – our experience suggests that people are less familiar with video recording compared to other types of data collection (e.g. interviews) [31].

(2) *Confidentiality*. Video data is by definition non-anonymous [17,25]. The research team would commonly retain an unaltered copy of the original audio and video recordings for purposes of data analysis [17]. Retaining the unaltered recordings can be regarded as low-risk providing that the data is securely stored and encrypted and that access is restricted to the research team [31]. Unlike studies where the data is destroyed after a relatively short period of time, [46] in communication research the recordings would normally be retained for years; this should be clearly explained to participants and consent for data retention after the end of the study (e.g. in archives for future communication studies) should be obtained separately [43].

If the data is shown outside the research team (e.g., in communication skills training), the risk of participant recognition cannot be eliminated, although it can be reduced through the altering of images and voices. The first thing to consider here is whether showing the data to external audiences is justified by scientific or educational purposes [31,38,51]. An output of our hospice study was a communication skills training resource (called *Real Talk*) containing audio and video clips from the consultations we had recorded; this resource is lodged on a DVD. This was justified by the lack of training materials in the field of end of life care communication based on real consultations (as opposed to simulated).

A second consideration is how much the data used for external dissemination should be altered; this will depend on the healthcare setting, the patient group, the venues where the data would be used, and how sensitive the recorded conversations and activities are [57]. For our Real Talk training package, we did not pixelate the participants' images or alter the pitch of their voices; the justification for this was to provide materials that were as authentic as possible (e. g., enabling access to aspects of non verbal communication, which could be useful in end of life communication training). However, we blanked out all the segments in the recorded conversations where person and place references were pronounced (using a white noise on Audacity); we also used pseudonyms to refer to the participants in the accompanying written materials [16,33,41]. Additionally, our training package is not publicly available (e.g. the video clips are not

available online); it consists of a password protected DVD made available to nominated trainers. In other studies, it may be necessary to use only audio recordings and to change voice pitch. Researchers should bear in mind that distorting images and voices cannot fully guarantee anonymity (even the use of a transcript can potentially lead to identification if someone can trace the content of the conversation and the information provided therein back to the participants). These aspects should be planned for and justified in the study protocol.

Third, because video data are intrinsically non anonymous, participants should be made aware of all intended uses of the recordings and associated risks of recognition. Although researchers have a duty to protect participants from exposure to unnecessary risks [30,34,56], if the study entails reasonable levels of risk (such as participant recognition in some dissemination venues where such recognition is not intrinsically or necessarily harmful), participants should be given the opportunity to decide for themselves whether or not to take part in the study and which uses of the recordings they are willing to permit [17,57]. This can be achieved by designing a consent form that gathers participants' informed consent separately for data collection and data uses. Researchers should consider whether to offer participants the opportunity to be audio recorded only (in our hospice study, 4 patients out of 37 decided to have their consultations audio recorded only). The informed consent form should contain separate sections for each intended use of the recordings, so that participants can separately authorise each of them or not [2,17,28,31,33,36]. In our hospice study, participants could decide to only authorise the research team to watch and listen to the data (this was the minimum level required for entry into the study) and to separately authorise different forms of data dissemination (a copy of the patient consent form used in our hospice study is provided as a Supplementary file A). Only one patient in our hospice study (out of 37) did not authorise use of the recording in communication skills training.

(3) *Coercion*. Video research often entails capturing naturally occurring events (as opposed to researcher generated) at the time when they are normally occurring. One implication is that it is not always be possible or practical to contact service users beforehand (e.g. for urgent appointments and for some outpatient consultations) and that they would be informed of the study on the same day where they would be asked to make a decision about participation. A way of dealing with this problem is a retrospective consent procedure where participants are informed of the study on the same day where the event to be recorded is due to occur, they are asked for verbal assent to be recorded, and are contacted again after a set interval (e.g. a day after the recording) to make an appointment where a more in-depth discussion about the study would happen and written informed consent would be obtained [25,38]. Using this procedure, the time that participants can use to deliberate about involvement in the study is provided after the recording rather than before. One advantage is that participants would know what has been recorded at the time of deciding whether to give consent, although the possibility should also be acknowledged that some participants might be reluctant to pull out after providing the initial verbal assent. The ideal procedure would be to obtain informed consent both before and after the recording. Using a retrospective consent procedure can be justified in cases where it is not possible to contact participants before the day where the event to be recorded is taking place. In our hospice study, we opted to use a retrospective consent procedure because it was not always possible to reach the patients before the day of their consultation with a doctor. Nevertheless, we sought to provide study information well in advance of the recording to all the participants we could reach before the day of the consultation. As a result of employing this consent procedure, we erased

6 recordings for which we did not obtain retrospective consent (in 2 cases because a patient or relative had decided to pull out of the study before providing written informed consent; in 4 cases because the patient's condition had rapidly deteriorated and they were unable to meet us to discuss retrospective consent).

4. Discussion and conclusion

4.1. Discussion

Analysis of healthcare communication using video recordings of practice can generate underpinning evidence for staff training and for guidance to improve healthcare communication. However, besides benefits, video-based research carries distinctive risks because the data are intrinsically non-anonymous and easy to transport and share. The prospect of being video-recorded can raise anxieties and concerns; it can constitute an additional burden for patients and clinicians who are already in a stressful situation. Video-based research presents an array of potential risks to privacy, dignity and safety in relation to showing recordings to others in the course of conducting the research and disseminating findings. Importantly, our review suggests that these areas of concern do not undermine the overall acceptability of video-based research – even in a setting where participants are highly vulnerable such as in palliative care [40]. Also, these concerns are not seen as outweighing the potential benefits of research in terms of increasing knowledge about practice and thereby supporting advances therein. Rather, these concerns mandate decisions and actions aimed at protecting participants against the risks. The recommendations in our study provide a framework for considering possible risks to participant privacy, dignity and safety in all phases of a research project, and for planning measures that can reduce those risks. This framework should be regarded as an aid rather than as a substitute for situated ethical decisions - which will necessarily vary across study settings, patient populations, type of video data being collected, and venues of dissemination.

Besides the focus on enhancing acceptability and overall ethical soundness of video-based studies, some of our recommendations are also relevant to scientific validity. If what is recorded is substantially different to what would happen were recording not occurring, then validity will be substantially compromised. Several of our recommendations concern ensuring video recordings are made in minimally intrusive ways, and thus contribute to ensuring validity. However, there are some matters pertinent to validity which we do not cover here, but which have been considered elsewhere [58].

Our proposals have their limitations: they should be regarded as preliminary because they are underpinned by a literature review (rather than a systematic review). We also acknowledge that the primary sources for the recommendations are existing guidance documents (sometimes backed by anecdotal reporting of their use in research studies) rather than studies that have empirically tested the acceptability of these procedures. The recommendations would undoubtedly benefit from development and refinement via both testing in the field and further expert consultation. Whilst intended to be of relevance internationally, our recommendations are strongly influenced by the environment of UK healthcare, research, ethics, and governance organisations and practices. Some recommendations may be irrelevant or not applicable in particular circumstances. Finally, our recommendations should be understood as a framework, rather than a substitute, for situated ethical judgements.

Our findings on the acceptability of video-based research should also be taken with some caution. These findings are influenced by the applied nature of the research considered in this study and may not extend to foundational research on language and social interaction. For instance, Hargreaves and Peppiatt [40] reported that the majority of patients interviewed in their study were pleased that the doctors wished to improve their communication skills. We do not know whether participant acceptability would be lower in studies where researchers wish to collect video data for more foundational communication research, without the stated goal of improving the understanding and practice of healthcare provider-user communication.

4.2. Conclusion

Well-designed video-based research can yield significant benefits by improving the understanding and practice of healthcare and generating interventions that nurture and enhance healthcare communication. Our recommendations provide a framework for designing video-based research work that is acceptable to participants and minimises the risks deriving from their participation. Although preliminary, our recommendations represent a considerable advance on what has been available before because they apply to a range of users, research approaches, and to an international audience.

4.3. Practice implications

Our recommendations formulate, for the first time, comprehensive guidance for research using video recordings for the purpose of better understanding healthcare and contributing to its improvement. Up until now, researchers have needed to 'reinvent the wheel' each time they embark upon a video-based study, and both the researchers and those who offer ethical and governance oversight have had limited materials upon which to guide deliberations about the adequacy of a study's design in relation to the ethical challenges specific to video-based research. We advocate use of our recommendations by those who design and conduct research, and those who oversee their work.

Conflicts of interest

The authors report no conflict of interests.

Acknowledgments

Appendix. : Database search strategy

Word groups used in electronic database searching

Word group 1: video* OR visual
Word group 2: health*
Word group 3: research
Word group 4: ethic* OR feasibility OR acceptability

After searching on each of these word groups, results were then combined with the Boolean term AND

Example of how the words were combined for search on Web of Science:

(TS = (video* OR visual) AND TS = (health*) AND TS = (research) AND TS = (ethic* OR feasibility OR acceptability))

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at http://dx.doi.org/10.1016/j.pec.2016.03.013.

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