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ORIGINAL RESEARCH

Methods and Effectiveness of Communication Between Hospital Allied Health and Primary Care Practitioners: A Systematic Narrative Review

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Background: There is a compelling rationale that effective communication between hospital allied health and primary care practitioners may improve the quality and continuity of patient care. It is not known which methods of communication to use, nor how effectively they facilitate the transition of care when a patient is discharged home from hospital. Our systematic review aims to investigate the methods and effectiveness of communication between hospital allied health and primary care practitioners.

Methods: Systematic review of quantitative and qualitative studies with narrative synthesis. Medline, CINAHL, EMBASE, PsycInfo and Proquest Nursing and Allied Health Sources were searched from January 2003 until January 2020 for studies that examined hospital-based allied health professionals communicating with community-based primary care practitioners. Risk of bias in the different study designs was appraised using recognized tools and a content analysis conducted of the methodologies used.

Results: From the located 12,281 papers (duplicates removed), 24 studies met the inclusion criteria with hospital allied health communicating in some form with primary care practitioners. While none of the included studies specifically investigated the methods or effectiveness of communication between hospital allied health and primary care practitioners, 12 of the 24 studies described processes that addressed components of their discharge communication. Four enablers to effective communication between hospital allied health and primary care practitioners were identified: multidisciplinary care plans, patient and caregiver involvement, health information technology and a designated person for follow up/care management.

Conclusion: There is currently no "gold standard" method or measure of communication between hospital allied health and primary care practitioners. There is an urgent need to develop and evaluate multidisciplinary communication with enhanced information technologies to improve collaboration across care settings and facilitate the continuity of integrated people-centered care.

Keywords: multidisciplinary, collaboration, discharge plan, continuity of care

Introduction

Discharge planning is a routine feature of healthcare, with a goal of improving the coordination of services following discharge from hospital.[1] Discharge communication provides a vital link between hospitals and primary care and is an important determinant of positive patient outcomes following hospitalization,[2] helping to facilitate seamless transitions of care between healthcare providers. Ineffective communication and information transfer, particularly during transitions of care,[3] can have substantial implications for patient safety and continuity of care,[4] patient and healthcare provider comprehension and satisfaction,[2] as well as resource use.[5]

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Despite the quality and economic imperatives to improve discharge planning[1] and facilitate transitions of care,[5] no single intervention has consistently demonstrated a reduction in re-hospitalization when implemented alone.[6] The World Health Organization set global priorities in 2018 to promote integrated people-centered health services through collaboration and integration across sectors, settings, providers and users,[7] yet coordination and timely transfer of information remain great challenges to optimized outcomes during transitions of care.[8] According to the WHO, people-centered care adopts the perspectives of individuals, caregivers, families and communities relative to the comprehensive needs and social preferences of people, rather than individual diseases.[7] A person-centered (or patient-centered) approach is less encompassing but still allows the person to be seen as a whole,[9] with needs and goals derived from their own social determinants of health.[7] Such an approach should allow patients to share their health information at the appropriate time with the right person.[10]

The patient is often the only constant when healthcare teams change during transitions of care,[11] yet differences in patient attitude[12] and patient ability can compromise the sharing of their health information.[13] Mixed evaluations to date[14] and persistent problems with data interoperability means that personal health records are not yet commonplace.[15] Health information technology (IT) developments have the potential to improve communication[16] and collaboration[17] at the time of discharge. Yet despite the increased adoption of health IT, there is very little research that evaluates the effectiveness of these information and communication systems.[10] Furthermore, evidence of system incompatibility and security issues[11] suggest that health IT solutions do not yet support sufficiently detailed or timely communication to or from hospitals to enable primary care practitioners to coordinate patient care effectively.[18] Many gaps in the system remain, and one-way discharge summaries from hospital medical practitioners to primary care practitioners continue to be the mainstay of discharge communication, even when multidisciplinary teams are internationally recognized as the preferred method of healthcare delivery.[19]

Multidisciplinary teams are an integral component of improved health outcomes and collaboration between people, professions, systems and settings.[20] Within the multidisciplinary team, allied health professionals provide specialized patient support and contribute important information regarding patients' function, social situation, recovery goals and discharge needs in addition to nursing and medical care.[21] Variability in the way discharge information is transferred[2] suggests processes are not standardized and anecdotally such information rarely encompasses the allied health view. The multidisciplinary team should provide the necessary diversity for collaborative discharge care planning, yet it is not known if hospital allied health perspectives are sufficiently represented nor how well they are communicated to primary care practitioners.[1]

Discharge communication remains a recognized problem area in spite of the international research[22,23] and regulatory attention it receives.[24] In the most recent review of 30 trials of discharge planning,[1] none reported on the quality of communication. Effective communication is essential for multidisciplinary collaboration within and between healthcare settings is, thus a key indicator of quality of care, yet it has not been systematically reviewed and synthesized. There is a particular gap in the knowledge base regarding communication between hospital allied health and primary care practitioners. Therefore, this systematic review sought to answer the following research questions:

1. What are the effective methods and/or models of communication between hospital allied health and primary care practitioners?
2. What are the enablers and barriers to effective communication between hospital allied health and primary care practitioners?

For the purpose of the review, the "3C Collaboration Model"[25] is used to define "communication" as the exchange of information to generate commitments that are then managed by "coordination" so that individual care activities interact through shared spaces to work "cooperatively" to ensure the success of the overall care process. These three components work together to comprise healthcare collaboration.[17]

Method

The protocol for this review was developed and prospectively registered with PROSPERO International Prospective Register of Systematic Reviews [PROSPERO CRD42019120410]. Using a systematic review process, the search was performed to identify both quantitative and qualitative studies published in English between January 2003 and January 2020. The "SPIDER" (Sample, Phenomenon of Interest, Design,

Evaluation, Research Type) tool[26] was used to define the inclusion and exclusion criteria to facilitate the identification and selection of studies in this review.

Sample

Only studies with mention of communication between hospital-based allied health professionals (including occupational therapists, physiotherapists, dietitians, speech and language pathologists, psychologists, social workers and case managers) and community-based primary care practitioners (including primary care nurse practitioners, primary care practitioners, geriatricians and general practitioners) working with adults were included. Papers that only examined forms of communication between pharmacists and medical practitioners were excluded to allow a review of issues beyond medication. Papers where healthcare professionals worked only in mental health or substance abuse settings were also excluded as their transitional care commonly involves the same healthcare teams (as opposed to the transfer of care from one team to another). Pediatric samples were similarly excluded.

Phenomenon of Interest

The review was not restricted by communication method, and thus any type of communication was included (including written documentation, such as discharge summaries/letters/reports, interim reports; verbal communications, such as handovers, telephone calls; electronic communications such as emails, telehealth, videoconferencing; and face-to-face communications such as case conferences and team meetings). It was essential that communication was between hospital allied health professionals and primary care practitioners.

Design

We excluded protocols, abstracts, meeting summaries, theses, letters, editorials, opinions and conference papers. Qualitative research without thematic analysis was also excluded.

Evaluation

Since the review aimed to identify, analyze and synthesize the literature relating to all forms of communication between hospital allied health and primary care practitioners, we considered any types of outcomes reported in the studies.

Research type

There were no restrictions of research type; qualitative, quantitative and mixed method were included, provided publications met the design inclusion criteria.

Identification and Selection of Studies

The search was conducted in the following databases: MEDLINE, PsycInfo, EMBASE, CINAHL and Proquest Nursing and Allied Health Source. To identify studies relating to the communication between hospital allied health and primary care practitioners, the key search terms included: "communication", "interaction", "collaboration" "allied health", "primary care" and "general practice" [full search strategy available as Additional File 1]. We excluded studies published prior to 2003 to reflect the more recently evolved methods and models of communication within healthcare, including electronic discharge summaries. One author [JS] conducted the searches. Reference lists of included studies were also screened by one author [JS] to identify relevant studies, and authors were contacted for further information as required. The search results from all databases were merged and duplicate articles removed using EndNote software. The Covidence platform was used for screening and eligibility assessment of the retrieved citations. The citations from the search, after excluding duplicates using EndNote, were uploaded into Covidence by one author [JS]. Two authors independently assessed all retrieved citations meeting the inclusion criteria on the basis of title and abstract [involved authors JS, NAL, KL, AS]. Potentially eligible studies were then reviewed in full text independently by two authors [involved authors JS, MR, KL] and a third author was consulted in cases of disagreement [involved authors NAL, KL].

Data Extraction

A standardized data extraction form based on the SPIDER tool[26] was developed to collate the sample, phenomenon of interest, design, evaluation and research type of the included studies. One author [JS] extracted all data, with an independent review from a second author [MR]. Extraction tool available on request.

Data Synthesis

A narrative synthesis strategy was then used to organize, summarize and present the data, based on Guidance on the Conduct of Narrative Synthesis in Systematic Reviews.[27]

This structured process thematically summarized studies based on Berlo's Model of Communication,[28] which categorized findings where possible into components of communication by "sender/source" and/or "receiver" and/or "message/channel". As the included studies were diverse, this initial synthesis allowed a breakdown of the varied and complex characteristics of healthcare communication. Following this classification, one author [JS] used an inductive approach to thematic analysis,[29] coding the studies line-by-line to elucidate common patterns of meaning and areas of potential interest.[30] Data were coded by collating in columns, colors and concepts to identify potential themes, which were then reviewed across the full data set to map and further refine the specifics of each prevalent theme. Generated themes were then tabulated in word documents relative to the research questions to determine the effective methods and/or models of communication, as well as the barriers and enablers to effective communication, between hospital allied health and primary care practitioners. To further contribute to thematic analysis, full texts of included studies were uploaded to NVivo 12.2 software program,[31] enabling identification of word frequency and word mapping for further data-driven exploration of conceptual relationships.

Quality Appraisal

Given the heterogeneity of the included study designs, studies were appraised for reporting quality using the most appropriate tool for their design. Specifically, we used the Joanna Briggs Institute Critical Appraisal Checklist for Qualitative Studies,[32] the McMaster Critical Review Form for Quantitative Studies[33] and the Mixed Methods Appraisal Tool[34] to assess the risk of bias in qualitative, quantitative and mixed-method designs, respectively. Acceptable quality was pre-defined as meeting ≥50% of applicable criteria.

Results

A total of 24 studies were included in this systematic review. Of these studies, 13 were qualitative, seven were quantitative and four used mixed-method designs. Studies were conducted in the United States (n=9, 38%), Australia (n=5, 21%), Sweden (n=3, 13%), The Netherlands (n=2, 8%), the United Kingdom (n=2, 8%), Canada (n=1, 4%), New Zealand (n=1, 4%) and Norway (n=1, 4%). Health professionals in these studies included nurses, nurse practitioners, doctors, medical students, occupational therapists, dieticians, physiotherapists, speech and language pathologists, social workers and case managers. Table 1 outlines the included study characteristics; Figure 1 presents the study PRISMA flow diagram.[35]

Overall study quality was rated as acceptable across all appraisal checklists, with all relevant studies met at least minimal standards of adequacy in accordance with their respective quality appraisal tools. The summary of the results of quality appraisals for qualitative, quantitative and mixed-method studies are presented in Table 2–4, respectively. Findings were summarized to address the two research questions separately and narratively synthesized to develop the themes.

The characteristics of the different communication methods for each study are categorized according to Berlo's Model of Communication[28] in Table 5, highlighting the roles and processes of different healthcare professions, healthcare teams and healthcare settings. Clear categorization was not possible where study samples included both hospital-based and community-based healthcare professionals but generally, hospitals were the senders or source of discharge communication to primary care practitioners, the intended receivers of patient information, using various messages and/or channels.

Effective Methods and/or Models of Communication Between Hospital Allied Health and Primary Care Practitioners

None of the included studies specifically investigated the methods of communication or evaluated the effectiveness of communication between hospital allied health and primary care practitioners. However, 12 of the 24 studies did describe programs or processes that indirectly addressed components of discharge communication between hospital allied health and primary care practitioners.[5,36–46] Narrative synthesis of each study included exploration of these 12 interventions within the context of their relationship to some guiding theoretical models of care, namely, the chronic care model,[47] the collaborative care model[48] and the integrated care model.[49] The relevance of the theoretical underpinnings of each model of care will be briefly discussed in relation to evolving healthcare practice, based on our analyses of these 12 interventions from the included studies.

Chronic Care Model

A descriptive paper by Allen et al in 2004 described the theoretical basis for a randomized trial of a comprehensive post-discharge care management program.[36] The report

Table 1 Summary of Included Studies Using SPIDER Tool Categories

Study	Sample	Phenomenon or Intervention	Design/Evaluation	Research
Allen et al, 2004[36] (United States)	No sample described.	Comprehensive, MDT post-discharge care management model used in an ongoing study.	Descriptive report of the rationale and theoretical basis for a randomized trial.	Quantitative
Baker & Wellman, 2005[50] (United States)	Hospital case managers (n=84).	Identification of discharge planning concerns regarding patient nutrition and need for dietician.	Survey with 86 questions and 6 case scenarios. SPSS for data analysis.	Quantitative
Bleijlevens et al, 2008[51] (The Netherlands)	Outpatients (n=333). Primary care staff (n=8).	Process evaluation of a primary care MDT falls prevention program.	Survey, structured phone/face-to-face interview and plenary group discussion.	Mixed methods
Christie et al, 2016[52] (United Kingdom)	Outpatients (n=45) and caregivers (n=18). Primary care staff (n=40).	Service provider and patient experiences and views about post-hospital care and PCP role.	A multi-center longitudinal study with qualitative semi-structured face-to face and phone interview. Thematic analysis.	Quantitative not provided. Qualitative
Dossa et al, 2012[53] (United States)	Outpatients (n=9) and caregivers (n=9).	Identification of patient/caregiver experience and care transition failures from hospital to home.	Longitudinal study using convenience sample. Thematic analysis.	Qualitative
Fleiger et al, 2019[37] (United States)	Hospital/primary care staff (n=18).	Exploration of payment and delivery system reform to improve coordination/ communication	Case Study Design. Semi structured in-depth interviews. Thematic analysis.	Qualitative
Hansson et al, 2017[54] (Sweden)	Hospital/primary care and patient/caregivers (n=24).	Healthcare professionals' experience of patient, caregiver and healthcare provider collaboration.	Purposive sampling for three focus group interviews.	Qualitative
Hawes et al, 2018[5] (United States)	Outpatients (n=268)	Effectiveness of a multidisciplinary outpatient-based transition program.	Descriptive statistics to summarize patient and process characteristics.	Quantitative
Hesselink et al, 2014[38] (The Netherlands)	Hospital/primary care staff, patient/caregivers (n=321).	Intervention Mapping Model to improve patient discharge process and reduce readmissions.	Description of model. 26 focus groups and 321 individual interviews.	Qualitative
Holmes et al, 2016[39] (New Zealand)	Hospital staff (n=42). Inpatients (n=51).	Allied Health introduced in hospital Emergency Department, working in interdisciplinary team.	Descriptive retrospective report of a pilot study. Staff and consumer survey.	Quantitative.
Hsiao et al, 2018[40] (United States)	Team leaders of Acute, Ambulatory, Behavioral and Nursing Care (n=8).	Community Health Partnership to improve coordination between hospital, nursing home and primary care for high-risk patients.	Description of design/implementation of a complex care coordination program.	Qualitative.
Ivanoff et al, 2018[55] (Sweden)	Hospital/primary care OT, PT, SW, nursing and medical staff (n=46).	Different professionals' views and experiences of a comprehensive geriatric assessment.	Purposive sampling for focus group interviews.	Qualitative.
Johannessen & Steihaug, 2013[56] (Norway)	Unit nursing, medical, OT & PT staff (n=24). Primary care staff (n=14).	Role of professional collaboration in patients' transitions home from hospital via transition unit.	Semi-structured interviews and meeting observations. Systematic text condensation.	Qualitative.
Kind et al, 2011[57] (United States)	Inpatients (n=187).	Rate of dysphagia recommendation omissions in discharge summaries for high-risk patients.	Retrospective cohort design: SLP reports abstracted, coded, compared.	Quantitative.
Massy-Westropp et al, 2005[41] (Australia)	Hospital/primary care medical, nursing and allied health staff (n=82).	Effectiveness of electronic data link to transfer information between hospital and primary care.	Staff satisfaction survey SPSS analysis. Content analysis of two staff focus groups with independent facilitator.	Mixed methods.
Mc Ainey et al, 2016[42] (Canada)	1st 18 month of referrals to Intensive Geriatric Service (n=692)	Intensive Geriatric Services Worker role and impact on clients, caregivers and healthcare system.	Chart audit analyzed with descriptive statistics. Naturalistic inquiry approach for phone interview inductive analysis.	Mixed methods.

(*Continued*)

Table 1 (Continued).

Miller et al, 2019[43] (United States)	Sample not described.	Protocol for advanced care coordination program between hospitals and primary care.	Database will allow continuous audit of SW-led longitudinal care coordination.	Quantitative
Rowlands et al, 2012[58] (Australia)	Hospital medical staff (n=22) and PCP (n=8).	Perceptions of quality, timeliness and format of patient information sent from hospital to PCP.	Grounded theory approach. In- depth interviews with convenience sample.	Qualitative
Rydeman & Tornkvist, 2006[59] (Sweden)	Hospital/primary care nursing and SW (n=31).	Experiences of the discharge process among different healthcare professionals.	Phenomenological approach. Data analysis from 8 focus-group interviews.	Qualitative
Tang et al, 2017[60] (United Kingdom)	Hospital/primary care medical, nursing, OT & PT staff (n=17).	Gaps in care for patients with memory deficits after stroke.	Semi-structured face-to-face/phone interviews. Thematic analysis.	Qualitative
Thomas & Siaki, 2017[44] (United States)	Hospital/primary care nurses, IT, pharmacist, case manager, unit secretary and PCP (n=?).	Analysis of discharge and rehospitalization rate to create action plans directed at reducing risks.	'Healthcare Failure Model and Effects Analysis' and 'Project Re-engineered Discharge' tool kits used to target risk priorities with stakeholder input	Mixed method
Trankle et al, 2019[45] (Australia)	Hospital/primary care nursing, medical, allied health, care facilitators, patient/caregivers (n=83).	Investigation of the effectiveness of an integrated care program.	Qualitative evaluation using a framework analysis, with 125 in-depth interviews over 12 months.	Qualitative
Wilson K et al, 2005[61] (Australia)	Nurse practitioners (n=9).	Nurse practitioners experience of collaboration with allied health and PCP	Descriptive exploratory study. Thematic analysis. Semi-structured interviews.	Qualitative
Wilson S et al, 2004[46] (Australia)	Hospital medical, SLP, SW, OT, PT & nursing staff (n=14). Patients (n=100)	Videoconference compared to audioconference for MDT discharge planning.	Randomized controlled trial. Two group comparison of two different methods of case conferencing. Staff satisfaction survey analysis process not described.	Mixed methods

Abbreviations: PCP, primary care practitioner; MDT, multidisciplinary team; OT, occupational therapist; PT, physiotherapist; SLP, speech & language pathologist; SW, social worker; IT, information technology; EMR, electronic medical record.

included details of a clinical information system allowing hospital care plans to be communicated directly to primary care. Within the paper, the authors ascribed what they termed a chronic care model to their program[36] however, has since become recognized as a proactive, person-centered, evidence-based approach with features more consistent with a collaborative care model.[48]

Collaborative Care Model

Chronic care management has evolved to incorporate a collaborative care model, which includes the active engagement of hospital and primary care providers in the shared care of patients beyond usual discharge summaries.[48] All 12 of the interventions identified in the literature[5,36–46] included features consistent with a collaborative model of care in their initiatives to improve hospital discharge planning and continuity of care, even though they did not all reference a theoretical basis.

A collaborative care model may have formed the theoretical framework for the "Accountable Care in Transitions Program"[5] described by Hawes et al in 2018, however was not specifically named. A well-coordinated, multidisciplinary team approach was used within the outpatient transition setting to support patients in the community after hospital discharge, facilitated by direct communication between social workers acting as care managers in both the hospital and primary care settings.[5] Social workers too were described as 'boundary spanners' to facilitate communication between a medical cancer center and primary care in an intervention described by Flieger et al in 2019.[37] In this study, the payment and delivery system innovation adapted an identified chronic care management model to become a more collaborative model of care. The reform prompted the routine sharing of information between hospital social workers and primary care chronic care coordinators, allowing improved care coordination and communication across healthcare settings.[37]

Improved communication between hospital and primary healthcare providers was also attributed to hospital allied health, in a 2016 retrospective report by Holmes et al describing the trial of a new allied health service in an emergency department.[39] The pilot project indicated that the inclusion of a combined social work and physiotherapy service increased patient links to primary care after hospital discharge. Stakeholder and staff feedback via

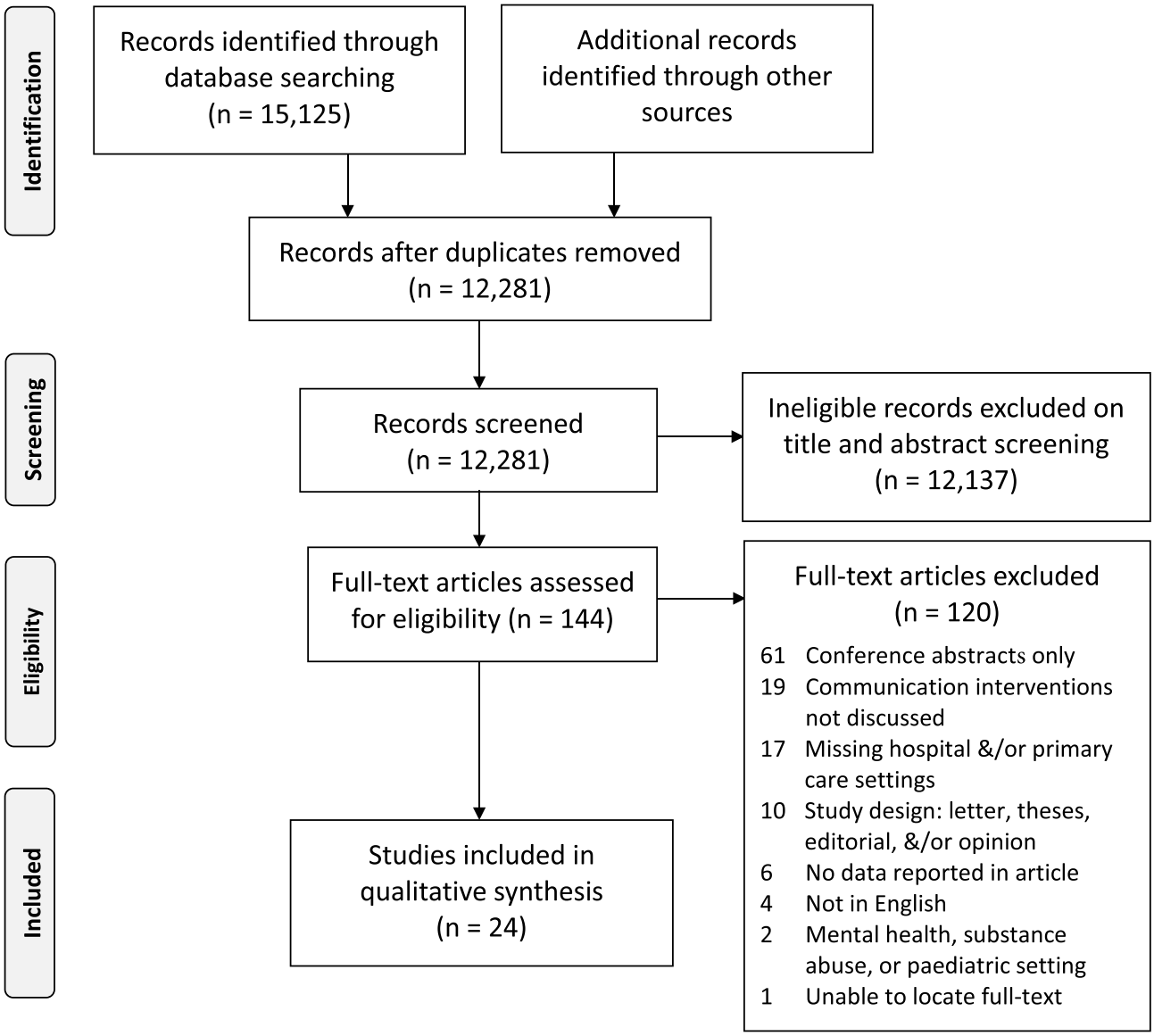

Figure 1 PRISMA flow diagram.
Notes:PRISMA figure adapted from Liberati A, Altman D, Tetzlaff J, et al. The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration. *Journal of clinical epidemiology.* 2009;62(10). Creative Commons.

a questionnaire suggested communication had improved between the hospital and primary care,[39] however, objective data were not provided so the findings need to be interpreted with caution.

Early attempts to use information technology (IT) to improve the hospital-primary care interface were described by two earlier studies. An electronic data linking system evaluated by Massy-Westropp et al in 2005[41] allowed hospital access to a primary care data base and alerted primary care providers to patient discharge from hospital. A study by Wilson et al in 2004[46] indicated that using videoconferencing between the hospital multidisciplinary team and primary care providers provided a better patient management plan than telephone conferencing.[46] Unfortunately, both studies relied on the opinions of a small sample of staff rather than finding statistically significant measures of effect, so the findings are difficult to generalize.

Health IT developments have enabled more sophisticated programs to measure and improve care coordination such as those described by Thomas and Siaki (2017)[44] and Hsiao et al (2018).[40] Both interventions are comprehensive, multidisciplinary approaches to facilitate communication of hospital discharge plans with primary care through the integration of electronic health records, promotion of patient engagement and ongoing

Table 2 Summary of Quality of Qualitative Studies Using JBI Critical Appraisal Checklist for Qualitative Research

Study	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Christie et al, 2016[52]	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Dossa et al, 2012[53]	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes
Hansson et al, 2017[54]	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Fleiger et al, 2019[37]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hesselink et al, 2014[38]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	Yes	Yes
Hsiao et al, 2018[40]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	Yes	Yes
Ivanoff et al, 2018[55]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Johannessen & Steihaug, 2013[56]	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Rowlands et al, 2012[58]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Rydeman & Tornkvist, 2006[59]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Tang et al, 2017[60]	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Trankle et al, 2019[45]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wilson K et al, 2005[61]	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes

monitoring of patients to ensure timely follow up with primary care. Both studies concluded that more efficient IT systems are required to support improved communication across the healthcare continuum.[40,44] Hsiao et al suggested that access to hospital medical records (inclusive of allied health documentation) enhanced primary care outcomes and recognized the need for input from community-based organizations to address social and economic issues.[40] This more integrated model of care, which they identified as a "care coordination approach", was reported to strengthen relationships between the hospital and community healthcare providers.[40]

Integrated Care Model

Hesselink et al[38] used an intervention mapping framework, commencing first with a systematic review of effective discharge interventions, to develop a comprehensive guide to improve communication between hospital and primary care. Integrated care was identified as one of the theory-based methods used to identify that discharge templates, a liaison person, reconciliation of medication and regular site visits were strategies to support high-quality discharge information, well-coordinated care, and direct and timely communication with primary care.[38] As mental healthcare and social services were not mentioned in the study, it would seem that these strategies were more closely aligned with a collaborative model than an integrated model of care.

As one component of an identified "integrated program of services", McAiney et al (2016)[42] described the role of an intensive geriatric service worker, developed to address the challenges faced by seniors transitioning from hospital to community care that place them at risk of poor outcomes including preventable hospital readmission. A theoretical model was not specifically mentioned; however, the intensive geriatric service worker role was developed with the collaboration of a geriatric health services network and a community-based mental health service to help seniors navigate a complex and disjointed healthcare system.[42]

In another example of the extension of a collaborative model of care, Trankle et al (2019)[45] noted that integrated care aims to improve communication, not just between hospitals and primary care but also between physical care and mental healthcare, as well as between healthcare and social care. The authors evaluated a program, the Western Sydney Integrated Care Program, which enabled shared patient care plans to be developed and accessed by hospital and community healthcare providers and patients. Within this broader evaluation, it was concluded that the program improved patient/caregiver experience of healthcare and built capacity in primary care, acknowledging electronic communication across healthcare sectors remained difficult.[45]

The "Advanced Care Coordination Program" proposed by Miller et al (2019)[43] also seemed to be based on an integrated model of care, to address the gaps in care during patient care transitions, although a theoretical framework was not discussed. Their social worker-led program focused on social determinants of health in a comprehensive and longitudinal care coordination intervention. The core components of care coordination were initial notification of patient hospital admission, a comprehensive needs assessment, clinical intervention as indicated and a phone call to the primary care providers.[43] The comprehensive needs assessment

Table 3 Summary of Quality of Quantitative Studies Using McMaster Critical Review Form – Quantitative Studies

Study	Study Purpose	Literature	Design	Sample-Detail	Sample-Size	Outcomes-Reliable	Outcomes-Valid	Intervention-Detail	Results	Analysis	Clinical Importance	Conclusions
Allen et al, 2004[36]	Yes	Yes	N/A	N/A	N/A	N/A	N/A	Yes	Yes	Yes	N/A	Yes
Baker & Wellman, 2005[50]	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	N/A	N/A	Yes
Hawes et al, 2018[5]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Holmes et al, 2016[39]	Yes	Yes	Yes	Yes	No	N/A	N/A	Yes	No	N/A	N/A	Yes
Kind et al, 2011[57]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Miller et al, 2019[43]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	Yes	Yes	Yes
Thomas & Siaki, 2017[44]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	Yes	N/A	Yes

addressed access to health care, economic status, housing status, psychological status, and social support. The program included the development of a shared data base, as well as the provision of continuing education and outreach to bridge healthcare and social care communication after hospital discharge.[43]

To summarize, while no specific methods or measures of communication between hospital allied health professionals and primary care practitioners were evaluated, elements of a collaborative care model[48] seemed to underpin the majority of studies describing interventions aiming to improve discharge planning and communication between hospitals and primary care settings. The more recent studies suggest that the collaborative model of care can evolve to become an integrated model of care, providing a theoretical framework for interventions to facilitate collaboration between healthcare and community services, including mental healthcare and social care services. There were some common concepts and components identified in the included studies which have helped and hindered general communication within and between hospital and primary care, which will be further discussed in relation to the enablers and barriers highlighted within each study.

Enablers and Barriers to Effective Communication Methods Between Hospital Allied Health and Primary Care Practitioners

Coding of the literature allowed the identification of the four most common themes in relation to components and processes of communication between hospital and primary care, allowing an insight into the factors affecting discharge communication between hospital allied health and primary care practitioners. The four emerging themes of "multidisciplinary care plans", "patient and/or caregiver involvement", "information technology" and "follow up", are outlined in Table 6 as the enablers to communication; however, they have their own barriers as described below and included in Table 7.

Multidisciplinary Care Plans

Multidisciplinary care plans were important components of the 12 interventions aiming to improve communication processes between hospitals and primary care.[5,36–46] The remaining 12 studies[50–61] assumed or suggested that multidisciplinary care plans were a means of facilitating

Table 4 Summary of Quality of Mixed Methods Studies Using Mixed Method Appraisal Tool (MMAT) Version 2018

Study	Criteria 5.1	Criteria 5.2	Criteria 5.3	Criteria 5.4	Criteria 5.5
Bleijlevens et al, 2008[51]	Yes	Yes	Yes	Cannot tell	Cannot tell
Massy-Westropp et al, 2005[41]	Yes	Yes	Yes	Yes	Yes
McAiney et al, 2016[42]	Yes	Yes	Yes	Cannot tell	Yes
Wilson S et al, 2004[46]	Cannot tell	Yes	Yes	Cannot tell	Yes

healthcare communication, as outlined in Table 6. There were, however, multiple barriers to the practice and process of multidisciplinary care plans mentioned in the 24 included studies, including ineffective relationships between health professions,[50–56,61] junior doctors responsible for the discharge summary[54] and allied health reports and recommendations omitted from the care plan.[50,57] Multidisciplinary care plans that are collaborative and person-centered may be a common goal, however, there is little evidence in the literature to determine their quality, consistency or whether they support or are supported by effective communication between hospital allied health and primary care practitioners. A word frequency search across all of the included studies using NVivo software[31] revealed that the term "communication" was not one of the ten most frequent words, only appearing in the 50 most frequent words [see Figure 2], despite the accepted understanding that communication is one of the cornerstones of collaborative healthcare.[62]

Patient and Caregiver Involvement

According to the World Health Organization, person-centered care takes into account the patient's values, beliefs and preferences while encouraging them to actively participate in their own individualized care plan.[7] Involving the patient and caregiver in discharge planning and encouraging self-management was incorporated in 18 (75%) of the 24 included studies[5,36–40,42–45,51–56,59,60] as seen in Table 6. Several of the studies reported negative patient experiences of the discharge process where they did not feel sufficiently involved or informed.[38,42,52,53]

Despite theoretical models, healthcare policies and hospital guidelines, it seems barriers remain to the involvement of patients in their own care planning, preventing healthcare practice from being truly person-centered and compromising initiatives to become more people-centered. Two studies focused specifically on the unmet communication needs of patients and their caregivers, leading to issues with continuity of care.[52,53] Other studies found some patients do not dare to speak up,[38] are unable to comprehend information or may be too medically unstable to contribute to discharge planning.[54] Furthermore, healthcare professionals may not feel equipped to broach certain topics with patients and caregivers.[60] Insufficient time and knowledge to allow effective communication with patients[50,54] could be further barriers to involving patients and caregivers in the planning of the transition from hospital to home.

Health Information Technology

There was a general consensus in the literature with 18 (75%) of the 24 included studies suggesting that advances in health IT may offer a promising solution to the inconsistency of healthcare communication,[5,36–38,40,41,43–46,52–59] as seen in Table 6, but multiple barriers to its implementation were identified. Logistical barriers to health IT include the lack of staff access and training,[41,46] lack of appropriate technology[36,40] and system incompatibility.[37,38,43,45]

Follow-Up

In the absence of consistent, compatible health IT systems to share care plans and standardize communication across healthcare settings, the importance of a designated person to support the transition of care was highlighted by 20 (83%) of the 24 included studies[5,36–40,42–45,50,51,53–55,57–61] as seen in Table 6. "Care manager" and "case manager" were the most common titles attributed to the healthcare professional identified to follow up patients after hospital discharge;[5,36,44,50,55] however, they were also referred to as 'chronic care coordinator,[37] "transition guide",[40] "care facilitator",[45] "health coach",[54] and "intensive geriatric service worker".[42] One study recommended that an occupational therapist and a geriatrician should provide post-discharge follow-up and communicate with primary care practitioner.[51] Other studies recommended various healthcare professionals could provide such follow-up and communication with primary care: a liaison nurse or pharmacist,[38] nurse practitioner,[61] advanced practice nurse[53] or social worker.[39] Of the four studies that did not refer to a designated person to provide follow up, all four studies

Table 5 Categorization of Studies Based on Berlo's Model of Communication

Study and Intervention or Phenomenon	Sender/Source (Communication Skills, Attitudes, Knowledge, System and Culture)	Receiver (Communication Skills, Attitudes, Knowledge, System and Culture)	Message/Channel (Content/Process/Format or General Method of Communication)
Allen et al, 2004[36] A comprehensive post-discharge stroke care management model: STEPS CARE	Poststroke consultation core team made up of hospital/primary care PT, geriatrician, care manager, primary care general internist & stroke unit clinical nurse specialist. Post stroke consultation extended team includes neurologist, pharmacist, physiatrist, SLP, SW, OT, psychologist & dietitian. Care manager home assessment & 6-month follow up to implement or adjust care plan, provides frequent phone follow up & home visit if needed. Copy of MDT care plans, guidelines & patient specifics to PCP by letter/phone. (All team members participate in care plan development & implementation as needed so all act as sender, receiver & channel)		
Baker & Wellman, 2005[50] Discharge planning for nutrition needs.	Case managers identified medical, nursing, SW & PT as important in discharge planning, not dietitians.	Not addressed	Not addressed
Bleijlevens et al, 2008[51] Multidisciplinary falls prevention program.	Medical risks and other fall-risk factors such as home hazards & behavior not systematically addressed by hospital medical staff.	Patients told to contact PCP for details	Geriatrician & OT sent written patient recommendations & referrals to PCP.
Christie et al, 2016[52] Post discharge care & role of PCP.	Not addressed	PCP had limited options & not always able to provide patient information/support. PCP want prognostic information from hospital to help manage patient recovery & expectations.	Not described
Dossa et al, 2012[53] Patient and caregiver discharge experience	Patients not satisfied with hospital provision of safety information & potential adverse events.	Despite common electronic medical record shared by facilities, patients did not feel that the hospital had communicated with their PCP.	Hospital phones patient 1–2 days post discharge. EMR between hospital & PCP.
Fleiger et al, 2019[37] A Chronic Care Management Model: the Vermont Oncology Pilot.	Person-to-person communication between hospital SW & chronic care coordinators for treatment regime changes and admission information.	There remains a lack of clarity about exactly what information each PCP wants and needs, & for what purpose.	Chronic care coordinators faxed PCP visit notes to hospital SW, where it was scanned into EMR.
Hansson et al, 2017[54] Health professionals' collaboration in the care of frail elderly patients.	Hospital had insufficient time to talk to patients/families. Medical staff with least experience handled discharge. Hospital did not discuss patient with PCP. Ingrained culture & professional boundaries hamper communication initiatives.	PCP may take over care of patients without full patient information.	Hospital nurse checks IT system, contacts hospital OT, PT & care planning nurse then sends nursing report to primary care assistance officer who contacts primary care OT, PT, care planning unit, hospital & PCP.
Hawes et al, 2018[5] Accountable Care in Transitions Program in a patient-centered medical home.	Care manager met with patient to discuss psychosocial concerns, behavioral health needs, barriers to care, medical equipment, potential palliative care, community resources & continuity of care plan.	The post-discharge MDT visit scheduled within 7 days post discharge with PCP, structured and coordinated using a standardized checklist to address new diagnoses, care plans & goals, follow-up tests, symptom management, care coordination & self-management strategies.	Hospital nurse phone patient to assess medication adherence/adverse event, review symptoms, identify care barriers & provided appointment reminder. Hospital & primary care pharmacist & care managers communicate via EMR.
Hesselink et al, 2014[38] Intervention Mapping.	Hospital writing complete, accurate & timely discharge letter resulted in a step-by-step checklist of follow up.	The relationships between providers are lacking (no formal meeting between hospital & PCP).	Patients are expected to participate in discharge, giving letter to PCP & knowing medical history & care plan.
Holmes et al, 2016[39] Allied health team in Emergency department.	Hospital SW linked patients with PCP, facilitated hospital MDT meetings & developed care plans.	Hospital allied health team (PT and SW) received referrals from hospital triage nurse.	SW facilitated MDT meetings/care plan.

(*Continued*)

Table 5 (Continued).

Hsiao et al, 2018[40] John Hopkins Community Health Partnership	Hospital risk screen, MDT care plan, patient/caregiver education, pharmacist-driven medication management.	Transition Guides met regularly with hospital MDT to discuss moderate to high-risk patients.	Personal post-discharge care & follow-up phone call with care coordination protocols & patient access phone line.
Ivanoff et al, 2018[55] Comprehensive Geriatric Assessment	Experience-based knowledge used more than standardized tests. Professions reluctant to encroach on other's territory so questions. Resources & organizational conditions set agenda more than person's needs (related to both senders and receivers).		Not addressed
Johannessen & Steihaug, 2013[56] Profession collaboration.	Hospital PT & OT sought collaboration whereas nurses were unsuccessful, due to pervading "us and them" attitude. Medical staff satisfied with collaboration. (above factors related to both senders and receivers of communication)		Healthcare providers from hospital & primary care attend MDT discharge meetings with patient.
Kind et al, 2011[57] Omission of dysphagia therapies	SLP recommendations not included in discharge summaries.	Not addressed.	Average 3.6-page discharge summary dictated by medical resident but 96% with senior medical review, edit & sign.
Massy-Westropp et al, 2005[41] Electronic data link from hospital to primary care.	Upon admission, automated check if patient under primary care service and report provided of current issues for hospital staff to access with password.	Primary care staff advised of existence of hospital report system, given access instructions and a short cut icon placed on desktop of each personal computer.	Automated email alert sent to primary care at discharge with admission details to prompt the primary care case coordinator to contact hospital.
McAiney et al, 2016[42] Intensive Geriatric Service Worker.	Intensive Geriatric Service Worker used an integrated and collaborative manner to work with primary care services and geriatric emergency management nurses in hospitals. (Intensive Geriatric Service Worker as sender, receiver and channel)		Intensive Geriatric Service Worker support post discharge PCP visits by reviewing patient questions to ensure asked, answered & understood.
Miller et al, 2019[43] Protocol for the Advanced Care Coordination Program.	Hospital emergency department to notify program SW of patient admission. SW will do biopsychosocial assessments, then connect patient with primary care	A survey will assess perceived frequency, timeliness & accuracy of communication, extent of problem-solving & mutual respect between & among program providers.	SW will make a phone call to the primary care team. A one-page fact sheet will inform healthcare facilities of the program & the referral process.
Rowlands et al, 2012[58] Perceptions of the quality, format and timeliness of patient information from hospital to primary care.	Often only hospital medical staff communicated with PCP. Nurses had little/no contact with PCP as they thought not their job. Care coordinator communicated on MDT behalf. Hospital allied health had no communication with PCPs and did not know if medical staff communicated information about their interventions to PCPs but if so, it would be limited (eg 'patient seen by dietitian'). Most hospital medical staff did not know if hospital allied health communicated with PCP and had varying views about necessity.		MDT meeting was main process of communication. One PCP had to make phone call to have information faxed during a patient consultation.
Rydeman & Tornkvist, 2006[59] Different professionals' experience of discharge	Mainly geriatric care unit nurses and hospital SW discussed patient discharge.	Primary care nurses were seldom involved in discharge process. PCPs often lacked necessary patient information when assumed responsibility.	Patient care management plan developed in weekly MDT meeting.
Tang et al, 2017[60] Gaps in patient care	Not addressed	Not addressed	Not addressed
Thomas & Siaki, 2017[44] Re-Engineered Discharge and Health Care Failure Mode Effects Analysis.	Evaluation identified need to improve care plan communication with primary care and care management for high-risk patients.	Not addressed	Electronic reports, interprofessional huddles, post discharge phone calls and documentation
Trankle et al, 2019[45] Evaluation of Western Sydney Integrated Care Program.	Specialist action plans provided at hospital discharge to inform patients and PCP about complex and changing care needs. Care facilitator communicates with hospital MDT, patient and PCP. (Care facilitator is sender, receiver and channel of communication)		PCP support phone line allowed faster access to hospital specialists. Care plan shared electronically with patients, hospitals, PCP & primary care

(*Continued*)

Table 5 (Continued).

Wilson K et al, 2005[61] Nurse practitioners' collaboration with allied health and PCP.	Nurse practitioners considered that successful quality health care environments were influenced by collaborative practices among MDT members. (Nurse practitioner as sender, receiver, and channel of communication)	Telephone call to PCP
Wilson S et al, 2004[46] Audio versus video-case conference	All but one of 14 healthcare providers found videoconference better for patient care management plan than audio (telephone) conference (attitude of senders and receivers in mixed MDT).	Videoconference to replace thrice weekly audio conference between hospital and primary care.

Abbreviations: PCP, primary care practitioner; MDT, multidisciplinary team; OT, occupational therapist; PT, physiotherapist; SLP, speech & language pathologist; SW, social worker; IT, information technology; EMR, electronic medical record.

suggested an alternative process to encourage patient follow-up by primary care; two of them recommended primary care providers be involved in hospital discharge planning meetings,[46,56] another relied on an automated hospital discharge alert system[41] and one recommended patient provision of follow-up service information, including whom to call if follow up does not occur.[52] Unlike the interventions recommending a designated person to provide follow up, these four studies[41,46,52,56] did not seem to include a process to ensure follow up had occurred after hospital discharge.

The main barrier to a designated person to follow up and ensure continuity of care appears to be ineffective relationships between healthcare organizations, due to and resulting in a lack of collaboration between healthcare providers[50] and between healthcare settings.[38,53–55,57–59] Siloed healthcare is clearly

Table 6 Enablers to Communication Between Hospital Allied Health and Primary Care

Study	MDT Care Plan	Follow-Up	Involve Patient and Caregiver	Health IT	Other Enablers
Allen et al, 2004[36]	Yes	Yes	Yes	Yes	MDT decision support and evidence-based protocols for PCP.
Baker & Wellman, 2005[50]	Yes	Yes	No	No	Dietician as care managers, contributing to discharge planning.
Bleijlevens et al, 2008[51]	Yes	Yes	Yes	No	Check if PCP agrees with hospital plan, check patient calls PCP.
Christie et al, 2016[52]	Yes	No	Yes	Yes	Provide PCP a range of 'normal' post-surgical consequences.
Dossa et al, 2012[53]	Yes	Yes	Yes	Yes	Primary care allied health support patient & PCP communication.
Fleiger et al, 2019[37]	Yes	Yes	Yes	Yes	SW as 'boundary spanners' across healthcare organizations.
Hansson et al, 2017[54]	Yes	Yes	Yes	Yes	'Project leader' to direct care plan.
Hawes et al, 2018[5]	Yes	Yes	Yes	Yes	MDT outpatient transition program based in primary care practice.
Hesselink et al, 2014[38]	Yes	Yes	Yes	Yes	Patient coaching to assert a more active role in own care plan.
Holmes et al, 2016[39]	Yes	Yes	Yes	No	Allied health service (SW and PT) in an Emergency Department.
Hsiao et al, 2018[40]	Yes	Yes	Yes	Yes	Telephone call from hospital to PCP. Patient access phone line.
Ivanoff et al, 2018[55]	Yes	Yes	Yes	Yes	Clear care plans built by MDT, family and all involved caregivers.
Johannessen & Steihaug, 2013[56]	Yes	No	Yes	Yes	Patients and PCP attend hospital discharge meetings
Kind et al, 2011[57]	Yes	Yes	No	Yes	Shift in the medical focus of discharge summary.
Massy-Westropp et al, 2005[41]	Yes	No	No	Yes	Automated staff access to EMR patient information, alert system.
Mc Ainey et al, 2016[42]	Yes	Yes	Yes	No	Supported PCP appointment so patient understands care plan.
Miller et al, 2019[43]	Yes	Yes	Yes	Yes	SW care coordinator with focus on social determinants of health.
Rowlands et al, 2012[58]	Yes	Yes	No	Yes	Guidelines for how, when & by whom communication happens.
Rydeman & Tonkvist, 2006[59]	Yes	Yes	Yes	Yes	Identification of shared care team values and purpose.
Tang et al, 2017[60]	Yes	Yes	Yes	No	PCP education regarding memory deficits after stroke.
Thomas & Siaki, 2017[44]	Yes	Yes	Yes	Yes	Script and algorithm to frame follow up phone calls to patient.
Trankle et al, 2019[45]	Yes	Yes	Yes	Yes	Guidelines & support phone line for PCP. IT training.
Wilson K et al, 2005[61]	Yes	Yes	No	No	Nurse practitioner collaborating with PCP and allied health.
Wilson S et al, 2004[46]	Yes	No	No	Yes	Shared hospital & community MDT by videoconference.
Total agreement	100%	83%	75%	75%	

Abbreviations: PCP, primary Ccare practitioner; MDT, multidisciplinary team; OT, occupational therapist; PT, physiotherapist; SLP, speech & language pathologist; SW, social worker; IT, information technology; EMR, electronic medical record.

Table 7 Barriers to Communication Between Inpatient Allied Health and Primary Care

Study	Barriers
Allen et al, 2004[36]	Few health systems have one IT system storing all patient encounters which is the main communication hurdle.
Baker & Wellman, 2005[50]	Case managers did not have sufficient knowledge of community services. Nurses rarely detailed patient's previous prior level of function or home circumstances, so decisions about post-discharge requirements are more difficult.
Bleijlevens et al, 2008[51]	Poor compliance with PCP follow-up and data not collected directly from PCPs (one-way communication).
Christie et al, 2016[52]	Patients experience gaps in support, services and information post hospital discharge.
Dossa et al, 2012[53]	Poor communication between patients and hospital regarding ongoing care; poor hospital response to PCP phone calls.
Fleiger et al, 2019[37]	Inability to create a technologically feasible electronic care plan.
Hansson et al, 2017[54]	Short length of stay so patient too unstable to comprehend information. Insufficient collaboration with patients/ caregivers. Absence of person responsible across organizations. Obstacles are societal (political ambitions & government actions), organizational (managerial procedures & economics) & individual (professional/personal interests).
Hesselink et al, 2014[38]	Attitudinal and behavioral factors (lack of relationship/collaborative attitude between hospital & PCP), organizational factors (lack of guidelines), technical factors (no shared IT system) or patient factors (patients less skilled or unwilling).
Hsiao et al, 2018[40]	Siloed health system and the lack of appropriate technology to collect, standardize and track data so not possible to share data with other community hospitals. Laws and regulations restricted availability of potentially sensitive patient data.
Ivanoff et al, 2018[55]	Ineffective collaboration between health professionals and people working closely with the older person so can be difficult to assess hidden need. Communication and structural barriers within and between each organization. Health and social care are complex organizations.
Johannessen & Steihaug, 2013[56]	The hospital PT, OT and medical practitioner had no formal collaboration with primary care. Healthcare providers have different understandings of interprofessional collaboration with some considering it an inappropriate working method
Kind et al, 2011[57]	Hospital allied health recommendations omitted from medically focused discharge summaries, so PCP not informed.
Massy-Westropp et al, 2005[41]	Staff lacked access to integration tools for EMR and needed more training.
Miller et al, 2019[43]	The program will rely upon notifications from other hospitals - not guaranteed that their staff will incorporate this process. No access to admission utilization readmission data at non-veteran hospitals could limit evaluation of adverse outcomes
Rowlands et al, 2012[58]	Communication influenced by length of MDT treatment time, change in treatment modality, delayed specialist letter.
Rydeman & Tonkvist, 2006[59]	Professionals often lacked necessary patient information when assumed care. Ambiguity in who responsible for what.
Tang et al, 2017[60]	Gaps, either in structure or communication between hospital & primary care. Reduced PCP consultation time.
Thomas & Siaki, 2017[44]	No process for post discharge. No identified staff member identified to conduct the call-backs & no standard script used
Trankle et al, 2019[45]	Poor functionality of shared health records and minimal IT between hospitals and PCP. IT services & training inadequate.
Wilson K et al, 2005[61]	Ineffective collaborative relationships between healthcare providers.
Wilson S et al 2004[46]	Staff not knowing how to take advantage of available technology.

Abbreviations: IT, information technology; COVID-19, coronavirus disease of 2019; PCP, primary care practitioner; MDT, multidisciplinary team; OT, occupational therapist; PT, physiotherapist; SLP, speech & language pathologist; SW, social worker; EMR, electronic medical record.

Figure 2 Word cloud of 50 most frequent words.

a contributing factor,[38,51,54,55] resulting in one-way communication,[51] with hospital discharge summaries often not received in time to be relevant to primary care practitioners[53,59] and/or without establishing a shared understanding by determining if the information is according to need and/or understood.[54]

In summary, enablers to effective communication between hospital allied health and primary care practitioners are multidisciplinary care plans, made in collaboration with patient and caregivers, electronically communicated to primary care, with a designated person to follow up to ensure that there is continuity of care in the community after hospital discharge. The barriers to such communication include that discharge communication can remain medically focused and may not include allied health recommendations or the preferences of patients and/or their caregivers. Even when multidisciplinary care plans aimed to be collaborative and person-centered or ideally based on a people-centered integrated model of care,[7] health IT systems do not consistently support effective communication between hospitals and primary care.

Discussion

Despite the wide-held assertion that hospital discharge processes and care transitions are improved through timely and accurate communication,[1,63] this narrative systematic review is the first to synthesize data on communication specifically between hospital allied health professionals and primary care practitioners. Given the paucity of research in the field, the review took a broad and inclusive approach to study across qualitative and quantitative research. In doing so, we have identified the lack of well-designed, intervention-based research related to communication between these key healthcare provider groups, which potentially suggests that hospital allied health professionals do not communicate at all with primary care practitioners.

Previous systematic reviews investigating healthcare collaboration have highlighted the importance of effective multidisciplinary communication.[17,64] While important to collaboration, there has been little recognition of the role of hospital allied health from the perspective of primary care practitioners. The terms "multidisciplinary" and

"interdisciplinary" are used interchangeably to denote a healthcare team working together; however, it has been suggested that the terms are conceptually different, with only the latter allowing the coordination of a common and coherent approach to the care required for collaboration.[65] The teams mentioned in the included studies were comprised of various healthcare professionals, acknowledged at times to be poorly described, with some relying on a social worker as the only mentioned hospital allied health representative. The World Health Organization recommends an interdisciplinary approach to healthcare;[7] however, differences in culture, resources and expectations of healthcare professionals, systems and populations may result in different interpretations of definitions, theoretical models and guidelines. Similarly, patient-, person-, and people-centered care are not interchangeable nor universal terms. The goal of patient-centered communication is to provide care concordant with patient's values, needs and preferences, allowing patients to actively participate in decisions about their health and care.[66] The core values of patient-centered communication are shared with the World Health Organization's definition of person-centered care, which they recommend extending to people-centered care by adopting the perspectives of individuals, caregivers, families and communities relative to people's comprehensive needs and social preferences.[7] The heterogeneity of the included studies within this review, although deliberate to capture the scope of the issue, may be reflective of these ambiguities in terminology, suggesting a need to establish what constitutes effective multidisciplinary and/or interdisciplinary, patient/person/people-centered care and/or communication before they can be further evaluated.

Despite the limitations in the breadth of the literature, a number of key observations may be drawn from our data synthesis. Firstly, multi-component interventions using an integrated model of care could improve the success of communicating the multidisciplinary, person-centered care plan from the hospital setting to the primary care setting. Secondly, a designated person to provide follow-up such as a case/care manager working across healthcare settings may be required to support care plans.[67] Thirdly, standardization of health IT processes to include hospital allied health input regarding patient function, social situation and recovery goals could facilitate more multidisciplinary collaboration with greater consideration of individual needs and preferences, especially during transitions of care. These findings are particularly relevant since the COVID-19 pandemic has placed increased pressure on health and social systems, affecting hospital to home transitions on many levels and highlighting the particular vulnerability of older adults with complex health and social care needs.[68] Public health measures such as social distancing, as well as shorter hospital stays to minimize infection, may have negative consequences for the management of chronic conditions including mental health issues however they have also accelerated some developments in virtual care.[67] Health IT developments such as telemonitoring, telehealth and web-based portals could facilitate communication between healthcare providers,[69] patients and caregivers.[15] Findings from this review can be integrated into clinical practice: multidisciplinary care plans with input from hospital allied health made in conjunction with patients (and their caregivers) need to be routinely included in electronic discharge summaries. Also, including the details of a designated follow-up person/process would facilitate discharge communication and similarly could be done electronically or virtually. While health IT has the potential to improve the quality and continuity of care,[70] research findings on the impact of electronic communication on clinical practice and outcomes have been mixed[71] hence further development is needed to be able to leverage this potential.

Heterogeneity of the included studies prevented a meta-analytic synthesis of studies, and this remains a limitation of the review. In addition, the reliance of this review on qualitative and mixed-method studies may reduce the representativeness of our findings. The majority of included studies originated from the United States and Australia, so the generalizability of their findings beyond these healthcare systems may be limited. We have also excluded relevant manuscripts in languages other than English, and by restricting our systematic evaluation to peer-reviewed literature we may have omitted additional publications of interest. Excluding studies from mental health and substance abuse settings prevented the narrative synthesis of the integrated care model used in these settings despite their relevance to WHO recommendations.[7] Truly person-centered and people-centered care cannot exclude mental health or the social determinants of health; however, many healthcare systems do not yet integrate physical and mental healthcare with social care, hence the exclusion criteria for the purposes of this literature review. We also acknowledge that we excluded studies involving children. Pediatric healthcare also incorporates an integrated care model;

however, it draws from other theoretical frameworks, most notably family-centered care; hence, the associated research would not necessarily be applicable to an adult population.

Conclusion

In conclusion, despite the paucity of research investigating communication between hospital allied health professionals and primary care practitioners, our findings do offer a way forward. Further research is needed to understand how healthcare providers can collaborate across healthcare settings and in partnership with patients to improve continuity and strive for integrated people-centered care. Importantly, research must involve allied health to ensure full consideration of the social determinants of health, especially in response to the COVID-19 pandemic.

Health IT systems must be improved to facilitate the consistent development, sharing and follow-up of multidisciplinary person-centered care plans. Such improvements may eventually integrate all health and care systems, allowing communication and coordination between hospitals and primary care, as well as mental and physical healthcare with social care, ensuring collaboration across the care continuum. Integrated people-centered care will only move from theory into practice with effective communication between hospital allied health and primary care practitioners.

Data Sharing Statement

All data generated or analyzed during this study are included in this published article [and its supplementary information file].

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors declare that they have no competing interests.

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