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Investigating inpatient and healthcare provider knowledge, attitudes and barriers to handover communication in India: A qualitative study

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27 ABSTRACT

28 **Objectives** 1. To investigate patient and healthcare provider knowledge (HCP), attitudes and
29 barriers to handover communication during inpatient care. 2. To explore potential
30 interventions for improving the storage and transfer of critical healthcare information.

31 **Methods** *Design:* Qualitative study comprising 41 semi-structured, individual interviews.
32 Thematic analysis using the Framework Method with analyst triangulation. *Setting:* Three
33 hospitals in Himachal Pradesh and Kerala, India. *Participants:* 20 male (n=10) and female
34 (n=10) chronic NCD patients and 21 male (n=15) and female (n=6) HCPs. Purposive
35 sampling was used to identify patients with chronic NCDs (Chronic Respiratory Disease,
36 Cardiovascular Disease, Diabetes or Hypertension) and HCPs working in the study hospitals.

37 **Results** For chronic NCD patients, three themes emerged: (1) *Public healthcare service*
38 *characteristics;* (2) *HCP-patient communication;* (3) *Attitudes regarding medical*
39 *information.* For HCPs, three themes emerged: (1) *System factors;* (2) *Information exchange*
40 *practices;* (3) *Quality improvement strategies.* Whilst some content within themes was
41 unique to each participant group, there was substantial overlap. Both patients and HCPs
42 recognised constraints affecting public healthcare; deficient primary care services placed
43 increased pressure on hospitals, subsequently limiting HCP consultation times. HCP and IP
44 reports also indicated an absence of structured referral formats, resulting in fragmented
45 information transfer. Additionally, whilst patient-held documents were a key vehicle for
46 information exchange between HCPs, not all patients transported them and HCPs stated that
47 this hindered continuity of care. Inpatient descriptions of HCP communication indicated
48 notable inconsistencies and a lack of patient-centeredness. HCPs reported systemic issues
49 such as absence of formal handover communication systems and training.

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3 50 **Conclusions** Handover communication for chronic NCD patients visiting public hospitals in
4
5 51 India is currently suboptimal. Structured information exchange systems are urgently required
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7 52 to improve quality, continuity and safety of care. Our findings indicate that well-designed
8
9 53 patient-held record booklets may be an acceptable and effective part of the solution.
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17 56 **STRENGTHS AND LIMITATIONS OF THIS STUDY**

- 20 57 • This is the first qualitative study, as far as the authors are aware, to investigate
21
22 58 handover communication within and between levels of healthcare in India.
- 23 59 • The number of interviews conducted with both patients and healthcare providers
24
25 60 ensured data saturation and provided a variety of critical perspectives.
- 26 61 • Analyst triangulation corroborated data analysis and strengthened the credibility of
27
28 62 the study.
- 29 63 • Recruitment challenges meant that inpatients were predominantly older (i.e. 45yrs+),
30
31 64 therefore experiences of younger patients could not be thoroughly explored.
- 32 65 • Awareness of the interviewer's context as a public health researcher may have
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34 66 resulted in participants distorting their responses to minimise critical judgement.
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1. INTRODUCTION

The increasing burden of chronic, non-communicable diseases (NCDs) such as cardiovascular disease, diabetes and chronic respiratory disease has become a global pandemic that is disproportionately affecting low and middle-income countries (LMICs).¹ This is placing great demand on under-resourced health systems that can only be relieved by employing efficient and integrated approaches to healthcare management. Central to efficiency and integration in healthcare is effective handover communication, which involves the exchange of patient-specific information between healthcare providers (HCPs) and between HCPs and patients/carers.²

Between HCPs, information exchange is critical during clinical handovers, which are the points in care where information, responsibility and accountability for patient care are transferred from one HCP to another.³ Such exchange is vital because safe and effective treatment can only be maintained if all relevant information has been shared and understood.⁴ A wealth of research from high-income countries (HICs) has evidenced the association between communicative breakdowns during care transitions and significant risks to patient safety. These risks include delays in diagnosis, medication errors and life-threatening adverse events.^{5 6} Additionally, effective information exchange between HCPs and patients is vital, as patients can provide valuable information to HCPs involved at various stages of their care pathway.⁴ Excellent HCP-patient communication also empowers patients to become active participants in their healthcare management; this is a key aspect of patient-centred care, which has been linked to improved patient satisfaction and outcomes.⁷

Despite the established importance of handover communication for health systems functioning and patient safety, there is currently a dearth of LMIC-based research on this topic. Only a few studies from India have evaluated and described deficiencies in information

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3 98 exchange during hospital shift-change and discharge.⁸⁻¹⁰ The authors of this study have
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5 99 completed a mixed-methods development project focussing on handover and continuity of
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8 100 care for chronic NCD patients in Kerala and Himachal Pradesh states, India. As we explored
9
10 101 the quality of handover communication for outpatients, we found that whilst all patients
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12 102 received documented information during consultations, the contents of this varied
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15 103 substantially. Critically, many notes did not contain all items of information necessary for
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17 104 facilitating continuity of care.¹¹ In addition, our quantitative study of handover during
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19 105 hospital discharge has found significant associations between failure to receive key
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21 106 healthcare information on discharge notes and an increased likelihood of adverse health
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23
24 107 outcomes (Humphries, Jaganathan, Panniyammakal, *et al.* 2018).

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26 108 The current study was conducted to gain further insight into the transfer of healthcare
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28 109 information for chronic NCD inpatients in the same study areas of India. The primary
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31 110 objective was to explore knowledge, attitudes and barriers to handover communication during
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33 111 the following points of care:

- 34
35 112 • Referral/transfer (i.e. communication between HCPs and between HCPs and patients
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37 113 when referring and/or transferring patients)
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40 114 • Hospital admission and discharge (i.e. communication between HCPs and patients
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42 115 regarding condition, treatment and/or management during admission and discharge)
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45 116 A secondary objective was to explore possible interventions to improve the storage and
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47 117 transfer of critical healthcare information.
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121 **2. METHODS**

122 **2.1 Overview**

123 We report findings from a qualitative study of handover communication for chronic
124 NCD inpatients in two Indian states. This study was conducted from December 2014 to
125 November 2015 across three hospitals: one rural secondary-care hospital in Himachal
126 Pradesh state, and one peri-urban secondary-care and one urban tertiary-care hospital in
127 Kerala state. These settings were selected to capture a range of hospital types within different
128 geographical settings. We selected public rather than private facilities as this is where a large
129 proportion of vulnerable patients access healthcare. See supplementary files “S1” and “S2”
130 for further information regarding the Indian healthcare system and study settings.

132 **2.2 Participant recruitment**

133 **2.2.1 Inpatients**

134 Inpatients were recruited opportunistically from hospitals by trained research
135 assistants (n=6).¹² Purposive sampling was used to identify individuals who met the
136 following inclusion criteria: adults (18 years+),¹³ admitted to hospital within 24 hours of a
137 researcher first meeting them, due to complications from one of the following chronic NCDs:
138 cardiovascular disease, chronic respiratory disease, diabetes mellitus, or hypertension. The
139 identification process took place via researchers approaching ward nurses and asking them
140 about patient demographic and admission details; patients were excluded if judged too unwell
141 to participate by ward nurses. Patients who met the inclusion criteria were provided with
142 verbal and documented study information. Written consent was obtained from literate
143 patients. For illiterate patients, oral consent was obtained along with a thumbprint and

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3 144 signature from a literate witness (i.e. family member/carer) in line with World Health
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5 145 Organisation guidelines.¹⁴ Inpatients were recruited until theoretical saturation was
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7 146 achieved;¹⁵ A total of 20 inpatients participated.
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14 148 **2.2.2 Healthcare Professionals**

17 149 Healthcare professionals (HCPs) were recruited from study hospitals by trained
18
19 150 research assistants (n=6). Due to the busy nature of the study settings, opportunistic sampling
20
21 151 was used to recruit as many HCPs as possible with a range of roles and experience.¹² If HCPs
22
23 152 stated that they were too busy to answer questions they were deemed “unavailable” and not
24
25 153 included in the study. HCPs were also recruited until theoretical saturation was achieved;¹⁵ A
26
27 154 total of 21 HCPs participated.
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34 156 **2.3 Sample Size**

37
38 157 As well as saturation being reached for both participant groups independently, the
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40 158 resulting sample size of 41 participants for this study was in accordance with Baker and
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42 159 Edwards’s review of sample sizes utilised in qualitative literature, indicating it was sufficient
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44 160 for achieving overall data saturation.¹⁶
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51 162 **2.4 Data collection**

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55 163 Interview data was collected entirely by the lead Indian researcher (SJ – an
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57 164 experienced public health researcher), who was not local to the study areas. Full
58
59 165 consideration was given prior to and throughout data collection to ensure that SJ was aware
60

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2
3 166 of the potential limitations of working with participants from culturally and linguistically
4
5 167 diverse backgrounds. SJ was not involved in patient treatment or previously known to HCPs.
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7
8 168 Inpatient interviews took place either on hospital wards or at patients' homes (depending on
9
10 169 convenience); interviews at patients' homes took place five weeks after discharge. HCP
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12 170 interviews took place in hospital offices. All interviews were conducted in either Hindi,
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14 171 English, Malayalam or a mixture depending on interviewee preference and audio recorded
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16 172 using a digital Dictaphone.

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20 173 Data collection took place in two stages. In the first stage (December 2014–October
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22 174 2015), pre-prepared topic guides were used to guide interviews (see supplementary file “S3”).
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24 175 Both inpatient and HCP guides included open-ended questions focussing on experiences and
25
26 176 attitudes of healthcare visits and information exchange. The HCP topic guide differed slightly
27
28 177 to capture information on health systems policy and practice; it also included questions
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30 178 regarding handover training and potential interventions for improving practices. Following
31
32 179 this stage, on the 11th of October 2015, a handover expert's meeting took place in India to
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34 180 present preliminary findings and discuss possible interventions.

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39 181 Researchers from the University of Birmingham and University of Warwick (UK)
40
41 182 facilitated the presentation of results and group discussions at the meeting. Representatives
42
43 183 (n=27) from the following international, Indian national and state-level organisations
44
45 184 participated: The World Health Organisation; The World Bank; ACCESS Health
46
47 185 International; The Ministry of Health and Family Welfare; The Public Health Foundation of
48
49 186 India; The National Centre for Disease Control; The Centre for Chronic Disease Control; The
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51 187 National Health System Resource Centre; The All India Institute of Medical Sciences; Aga
52
53 188 Khan Health Services; AMRITA Institute of Medical Sciences and Fortis Hospitals. During
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55 189 discussions, a consensus was reached that patient-held record booklets were likely to be an
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57 190 acceptable and sustainable intervention to improve information exchange. This was based on

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3 191 the international success of similar patient-held records used in maternal healthcare around
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5 192 the world.¹⁷⁻²¹ It also took into account the delays in developing universal electronic
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8 193 information systems. Overall, it was opted as the most pragmatic intervention and numerous
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10 194 experts felt that booklets could also improve patient self-management if they contained
11
12 195 disease-specific advice.

15 196 Therefore, following the meeting the second stage of qualitative data collection
16
17 197 (October–November 2015) commenced. Topic guides were updated to include questions
18
19 198 regarding the utility of patient-held booklets (see supplementary file “S4”). In addition, if
20
21 199 participants stated they had limited time then researchers interviewed them using a shortened
22
23 200 topic guide containing targeted questions on patient-held booklets (see supplementary file
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25 201 “S4”).
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33 203 **2.5 Data Analysis**

36 204 All audio recordings of interviews were transcribed verbatim and, if necessary,
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38 205 translated into English by SJ. All transcripts were then sent to the lead UK researcher (CH –
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40 206 public health PhD student) for analysis. Data was analysed using the Framework Method,²²
41
42 207 as this is the method most commonly used for semi-structured interview transcripts. Analysis
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44 208 occurred through the following stages central to the Framework Method: transcription,
45
46 209 familiarisation, coding, charting, and interpretation. Over a one-month period, familiarisation
47
48 210 with the data took place via slow reading of transcripts and CH consulted with SJ to gain a
49
50 211 clear understanding of interview contexts. Once this was complete, coding began and two
51
52 212 transcripts were chosen at random from each batch of interviews (i.e. 2 inpatients and 2 HPC
53
54 213 transcripts) for independent coding by an additional analyst (SG – professor of medical
55
56 214 sociology) for analyst triangulation.²³ Inpatient and HCP transcripts were coded separately in

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3 215 order to be able to assess similarities and differences between participant groups - Inpatient
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5 216 transcripts were coded first. The coding process involved further familiarisation with the
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7
8 217 data, followed by open coding where certain transcript content was highlighted and allocated
9
10 218 descriptive labels (codes) to interpret the phenomena identified in the text. The development
11
12 219 of codes and themes was entirely data-led and analysed manually.²⁴

15 220 Microsoft Excel was used to organise participant codes. CH created initial categories
16
17 221 by clustering similar codes developed from the two randomly selected inpatient and HCP
18
19 222 transcripts. CH and the additional analyst (SG) then met to discuss their analyses. As both
20
21 223 had produced similar codes and concepts, the categories that were created were mutually
22
23 224 agreed upon. CH then continued with category development until all transcripts had been
24
25 225 coded and inserted onto the spreadsheet. Following analysis of 20 inpatient and 26 HCP
26
27 226 transcripts, no new categories had been produced. This served as confirmation that data
28
29 227 saturation had been met.¹⁵

34 228 Following coding, categories were grouped into subcategories and linked to produce
35
36 229 themes. Then, via the process of charting,^{22 24} themes for each participant group were used to
37
38 230 create a framework matrix into which participants' quotes were inserted, corresponding to
39
40 231 their representative subcategory. This provided a visual representation of themes, which
41
42 232 facilitated the mapping and interpretation of the data. After completing separate analysis of
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44 233 patient and HCP data, results of both participant groups were compared to assess similarities
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46 234 and differences between their reports of knowledge, attitudes and barriers to handover
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48 235 communication. A Venn diagram was used to summarise the separate and overlapping
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50 236 content, which was linked to sub-categories from original themes.

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3. RESULTS

3.1 Inpatient characteristics

20 male (n=10) and female (n=10) inpatients aged between 25 and 71 were interviewed.

Participants' background characteristics were varied (Table 1). Inpatients completed interviews in English (n=11), Hindi (n=4), Malayalam (n=4) and a mixture of Hindi and English (n=1).

Table 1. Inpatient characteristics

Characteristics	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	N (%)
Age	65	45	70	58	71	56	57	70	55	25	72	50	55	69	70	50	70	70	70	70	25-71
Sex																					
Male	✓	✓	✓	✓	✓				✓	✓	✓	✓				✓					10 (50)
Female						✓	✓	✓					✓	✓	✓		✓	✓	✓	✓	10 (50)
Literacy																					
Illiterate								✓					✓		✓	✓	✓	✓	✓	✓	8 (40)
Literate	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓							12 (60)
Education Level																					
None/minimal primary school-level								✓				✓	✓		✓	✓	✓	✓	✓	✓	9 (45)
Completed lower primary school					✓		✓														2 (10)
Completed upper primary school						✓															1 (5)
Completed secondary school									✓												1 (5)
Completed higher vocational studies																					0 (0)
University graduate (or above)	✓			✓						✓	✓										4 (20)
No data		✓	✓											✓							3 (15)
Employment Status																					
Employed		✓		✓	✓				✓			✓	✓	✓		✓					8 (40)
Unemployed						✓	✓	✓							✓		✓	✓	✓	✓	8 (40)
Student										✓											1 (5)
Retired	✓		✓								✓										3 (15)
Chronic NCD(s) (related to admission)																					
Chronic Respiratory Disease			✓	✓		✓		✓					✓			✓					6 (30)
Diabetes	✓													✓	✓	✓	✓	✓	✓	✓	8 (40)
Hypertension									✓		✓	✓				✓	✓	✓			6 (30)
Cardiovascular Disease (other than Hypertension alone)	✓	✓			✓		✓	✓	✓	✓	✓	✓									9 (45)
Language(s) used during Interview																					
English (only)	✓	✓	✓	✓										✓	✓	✓	✓	✓	✓	✓	11 (55)
Hindi (only)						✓	✓	✓	✓												4 (20)
Malayalam (only)										✓	✓	✓	✓								4 (20)
English & Hindi (mixture)					✓																1 (5)

3.2 Healthcare Professional characteristics

21 male (n=15) and female (n=6) HCPs aged between 22 and 55 were interviewed. HCP roles included doctors (n=17), nurses (n=2), pharmacists (n=1) and medical records officers (n=1). HCP qualifications and experience were varied (Table 2). HCPs completed interviews in English (n=15), Hindi (n=2), Malayalam (n=2) and a mixture of Hindi and English (n=2).

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Table 2. Healthcare professional characteristics

Characteristics	1	2	3	4	5	6	7	8	9	11	14	15	18	19	20	21	22	23	24	25	26	N (%)	
Age	44	24	33	25	23	39	44	35	52	50	50	43	50	40	46	55	22	35	35	45	35	22-55	
Sex																							
Male	✓		✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓				✓	15 (71.4)	
Female		✓				✓		✓										✓	✓		✓	6 (28.6)	
Qualification/s*																							
MD	✓		✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					13 (61.9)	
MPH						✓																1 (4.8)	
MBBS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					17 (81.0)	
BSc Nursing																		✓			✓	2 (9.5)	
BS Pharmacy																			✓			1 (4.8)	
Graduate (non-medical degree)																					✓	1 (4.8)	
Official position																							
Medical Superintendent						✓																1 (4.8)	
Chief Medical Officer									✓													1 (4.8)	
Medical Officer													✓									1 (4.8)	
Consultant	✓		✓				✓	✓					✓	✓	✓	✓	✓					9 (42.9)	
Surgeon		✓								✓												2 (9.5)	
General Medicine											✓											1 (4.8)	
Intern Doctor				✓	✓																	2 (9.5)	
Ward Nurse																		✓			✓	2 (9.5)	
Pharmacist																				✓		1 (4.8)	
Medical Records Officer																					✓	1 (4.8)	
Years of experience in position																							
<1		✓			✓																	2 (9.5)	
1 – 3				✓																		1 (4.8)	
4 – 6						✓		✓										✓		✓	✓	5 (23.8)	
7 – 10			✓				✓													✓		3 (14.3)	
>10	✓								✓	✓	✓	✓	✓	✓	✓	✓	✓					10 (47.6)	
Place of work																							
General Hospital		✓	✓	✓	✓									✓		✓	✓	✓	✓			9 (42.9)	
Regional Hospital	✓								✓	✓	✓		✓								✓	✓	7 (33.3)
Taluk Hospital						✓	✓	✓				✓			✓							5 (23.8)	
Language(s) used during interview																							
English (only)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓					15 (71.4)	
Hindi (only)																					✓	✓	2 (9.5)
Malayalam (only)																		✓	✓			2 (9.5)	
English & Hindi (mixture)	✓											✓										2 (9.5)	

3.3 Charted Data

During analysis of patient and HCP data, three themes (with subcategories) emerged for each participant group. Patient themes were 1.Public healthcare service characteristics, 2.HCP to patient communication and 3.Attitudes regarding medical information (Table 3). HCP themes were 1.System factors, 2.Information exchange practices and 3.Quality improvement strategies (Table 4).

Following separate analysis of patient and HCP data, the results of both participant groups were compared to assess similarities and differences between their reports of knowledge, attitudes and barriers to handover communication. The results of this comparison are displayed in Figure 1 (see supplementary file “S5”).The similarities will be described first, followed by the differences. To ensure confidentiality, numerical pseudonyms have been used when presenting quotes.

Table 3. Summary of charted data for inpatients (IPs)

IP	Public healthcare service characteristics		HCP to patient communication			Attitudes regarding medical information		
	Large patient loads (overcrowding)	Deficient primary care services	Verbal healthcare information (during admission)	Referral information	Impoliteness/impatience	Transportation of medical documents	Patient-held booklet intervention	Dissatisfaction with lifestyle advice
1						✓		
2			✓					
3	✓		✓		✓	✓		
4			✓			✓		
5		✓	✓	✓	✓			
6				✓		✓		
7	✓	✓		✓		✓		
8				✓				
9			✓					
10			✓					
11	✓		✓			✓		
12			✓	✓		✓		
13			✓			✓		
14		✓	✓				✓	✓
15		✓	✓		✓		✓	✓
16		✓	✓			✓	✓	
17			✓			✓	✓	✓
18		✓	✓			✓	✓	
19			✓			✓	✓	
20			✓				✓	✓

Table 4. Summary of charted data for healthcare professionals (HCPs)

HCP	System factors		Information exchange practices					Quality improvement strategies				
	Time & resource constraints	Absence of handover communication training	Absence of structured formats for information exchange between HCPs	Hospital record keeping	Ad-hoc phone calls	Patient-held medical documents	Discharge instructions	Hierarchical transfer of responsibility	Increase resource provision	Introduce formal referral systems	Implement "e-health" systems	Patient-held booklet intervention
1			✓			✓	✓		✓			
2			✓			✓	✓					
3						✓			✓	✓	✓	
4	✓		✓			✓	✓					
5			✓	✓		✓						
6	✓		✓						✓		✓	
7	✓		✓					✓				
8	✓							✓				
9									✓			
11	✓	✓	✓		✓		✓					
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3.4 Overlapping content

3.4.1 Public healthcare constraints

During interviews, a number of patients reported that they chose to visit public hospitals because of the better availability of healthcare staff compared to local healthcare facilities, such as smaller hospitals and primary/community health centres:

“We have very limited time, we did go to local hospital but doctors are not there. So if we get time we will come here rather than going to a hospital where there are no doctors. (IP 15)”

However, multiple patients also reported that government hospitals were often crowded with high daily patient loads:

“There is so much crowd there you can’t ask or hear anything there... so many people are there now, you cannot do anything. (IP 11)”

The human resource issues at government primary and community healthcare facilities were also mentioned by HCPs:

“It will be useful if availability of doctors is ensured at the peripheral institutions around the clock. At times it is not there. (DOC 1)”

Additionally, in our study settings most hospital doctors worked in both outpatient clinics and inpatient wards on a daily basis. Many doctors expressed concerns of time pressures due to the large patient volumes seen at hospital outpatient clinics and the subsequent lack of time they had to attend to all patients:

“We can hardly spend five minutes with each patient, seeing the crowd you will just want to finish everyone soon. (DOC 7)”

1
2
3 Some doctors also reported that human and medical resource constraints across public
4
5 healthcare facilities were hindering quality of care:
6
7

8 *“[It’s] not [about] motivation, [it’s about] resource limitation. It’s not humanly possible*
9 *to see people every day for seven days. Quality definitely gets compromised. (DOC 3)”*
10
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16 **3.4.2 Referral communication**

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20 A number of patients who recalled being referred from a previous healthcare facility to the
21
22 hospital reported that they were not provided with any referral information:
23
24

25 *“No, they didn’t give any parchhi [papers]. We were getting medicines right only that*
26 *is with us. (IP 8)”*
27
28
29

30 HCPs also discussed referral communication. Doctors explained that there were no structured
31
32 processes to follow for information exchange during referrals:
33
34

35 *“Yeah there is no proper way of doing it... inpatients sometimes we have to [refer]*
36 *but as I told you we never had a structured format. (DOC 14)”*
37
38
39

40
41 However, despite a lack of structured systems, some doctors described making ad-hoc calls to
42
43 ensure that some information was transferred when referring a patient:
44
45

46 *“Sometimes I call the doctor to tell them that so and so is coming. Please do the*
47 *needful. If I know the patient or doctor. (DOC 11)”*
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3.4.3 Patient-held medical information

At the point of hospital admission, patient-held notes and/or medical records can facilitate optimal care by providing HCPs with key patient-specific information. When asked about whether they brought medical papers to the hospital, most patients reported that they regularly stored and transported papers to HCP visits; these included referral notes, prescription cards, test results and other records from inpatient/outpatient/primary care:

“Yeah we have always kept everything safely. [Shows researcher a bag with all sort of papers like reports, lab tests, etc.] (IP 3)”

Doctors also talked about patient-held medical information during interviews. For example, some doctors reported that patients regularly kept and transported their medical records:

“Almost everyone comes with medical reports. (DOC 11)”

However, other doctors described that, in their experience, the availability of patient-held records was less consistent and that this could negatively impact continuity of care:

“Some of them do bring investigations and all others don't bring much and we have to work out what happened from the start. (DOC 3)”

3.4.4 Healthcare management communication

When asked about verbal HCP communication, many patients reported that during admission and/or discharge a HCP had provided them with some basic verbal healthcare management information (i.e. medication, treatment, lifestyle and/or follow-up requirements). However, the quantity of information received appeared to vary notably between patients. For example, some recalled being given detailed instructions:

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2
3 *“Doctor says everything. I was given medicines and now they asked me to take*
4 *injections also. Doctor is saying I am not controlling my sugar. The nurse taught me*
5 *how to take injection. (IP 19)”*
6
7
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10 Conversely, others appeared to receive relatively limited information and one carer reported
11 having to seek healthcare advice from alternative sources:
12

13
14
15
16 *“Doctors don’t explain everything. We speak to our friends and get details from*
17 *them. (Carer - IP 16)”*
18
19

20
21 HCPs also discussed their healthcare communication practices with inpatients. Whilst talking
22 about discharge, a nurse described the usual amount of time taken to explain information to
23 each patient:
24
25
26

27
28
29 *“Usually we take 20-25 minutes to instruct the patients. If the patients understand*
30 *then it can be even faster. (NUR 1)”*
31
32

33
34 Doctors reported that they provided patients with documented information on discharge cards
35 and verbally advised inpatients to return to their local HCP/healthcare institution during the
36 discharge consultation:
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38
39

40
41 *“We give them a discharge card. Discharge card is there we have written and then we*
42 *refer them to the local hospital or where they come from. (DOC 15)”*
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3.4.5 Booklet intervention

During interviews that took place after the handover expert meeting, patients were asked for their opinion regarding the utility of a patient-held booklet where records could be stored and transported to HCP visits. Most appeared to think that it might be effective and could help with self-management, including those who were illiterate:

“Yeah, sometimes we don’t know what to do so it would be good if some paper is there to help us. We can’t read it ourselves but our son or daughter-in-law can help us. (IP 17)”

HCPs were also asked for their opinions regarding the booklet intervention. Many generally felt it could be useful, but various conditions and/or reservations were also expressed. For example, doctors felt that the success of the booklet would rely on patient attitudes:

“That will depend on the patients, if they maintain that and bring it every time. For us there is no change, we write our observations in paper or notebook, doesn’t matter... Might be helpful. (DOC 22)”

Related to this, one doctor felt that to see the most benefit, patients needed to be regularly instructed to keep and transport their medical documents:

“We write the communication but the patients don’t keep them proper. I think we have to tell the patients to keep the letters and papers. (DOC 4)”

3.5 Content unique to Inpatients

3.5.1 Attitudes regarding HCP communication during admission

A few patients recalled receiving some unfavourable/impolite treatment from healthcare staff during their hospital admission:

“The doctor’s don’t speak much. They explain but get angry if you don’t understand them. (IP 3)”

In addition, some patients expressed dissatisfaction with the lifestyle advice provided. In particular, patients of lower socio-economic status felt that nutritional instructions were not suitable for them due to their time and financial constraints:

“We are daily labourers we can’t follow all the instructions... We can’t follow that, we are poor we do hard work and we just can’t concentrate on eating. Whatever is there we just eat. (IP 15)”

3.6 Content unique to HCPs

3.6.1 Institutional/systemic factors

Despite displaying good knowledge of what information should be transferred during patient handovers, when asked about training opportunities numerous doctors mentioned that they had not received any formal handover training. Some recalled that this type of training was not provided at medical school:

“I think it was not there in medical curriculum. (IP 1)”

1
2
3 Others reported that training was not provided in their workplace/s and instead they learned
4
5 on the job:
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7

8 *“We are sent to the wards, we see what our seniors do and we do that’s all. We have*
9
10 *to develop our communication skills ourselves no formal training is there. (DOC 14)”*
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14 When asked about hospital record keeping, a medical records officer stated that inpatient
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16 records are stored in hospitals following patient discharge for up to ten years. However, the
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18 same officer also indicated that these paper-based records are not easily accessible:
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20

21 *“Definitely I can locate any record but it might take some time to locate them. (MRO*
22
23 *1)”*
24
25

26 27 28 29 **3.6.2 Organisational culture** 30 31

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33 Based on reports from both doctors and nurses, it appeared as though some hierarchical
34
35 transfer of responsibility for documented handover communication took place in hospitals.
36

37 For example, a senior doctor mentioned that they instructed medical interns to write notes for
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39 them when their patient load was high:
40
41

42 *“We do write in the papers, whether it’s discharge card or outpatient sheets. When*
43
44 *patient load is high, then we tell our interns to do it for us, we check that and then*
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46 *sign. (DOC 22)”*
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3.6.3 Requirements for improving information exchange

During interviews, HCPs were asked for their thoughts on intervention ideas to improve information exchange between HCPs and between HCPs and patients. Numerous doctors felt that there needed to be a notable increase in public healthcare resource provision:

“Infrastructure is very small but the outpatient department is ten times more than it can manage, so more posts should be created... We have to increase the manpower and also our materials. (DOC 15)”

In addition, doctors discussed the idea of introducing structured referral documents and systems to improve referral communication:

“You can supply people with [referral] forms and make it mandatory that residents have to maintain a register. In that case they will maintain the register. (DOC 3)”

Whilst discussing current information systems one doctor in Kerala reported that an application had been made for a near-future transition to computerised healthcare information systems. This appeared to be a state-wide plan for public healthcare facilities:

“We have submitted a proposal for paperless computerisation system for doctors, so I think state-wide they are planning to do that. (DOC 6)”

4. DISCUSSION

4.1 Main findings

This study presents qualitative data on inpatient and HCP knowledge, attitudes and barriers to handover communication in public hospitals in Kerala and Himachal Pradesh states, India.

Overall, the results show that verbal and documented information exchange between HCPs and between HCPs and patients is often suboptimal, with a lack of structured systems and HCP education in place to ensure sufficient continuity of care. Whilst three themes emerged for each participant group, comparison of the results showed that there was also a notable amount of overlapping content. These results have highlighted the multifaceted nature of handover communication within and between levels of healthcare in India. With regard to public health, the findings have also elucidated a number of key areas to address to improve the continuity and safety of chronic NCD patient care.

During interviews, both inpatients and HCPs recognised the resource constraints affecting public healthcare. The main issue reported was deficient primary healthcare services, which is in line with well-established findings of limited primary care infrastructure across India and numerous LMICs.²⁵ In our study settings, under-resourced primary care resulted in many patients preferring to visit hospitals. Subsequently, large patient loads were seen in outpatient and inpatient departments. Doctors reported that this limited their consultation times and ultimately affected the quality of information they could provide to patients. Notably varied patient recollections of healthcare information provided by HCPs during admission further evidenced the impact of time barriers on information exchange. The pressures reported here have also been identified in our previous outpatient research and may provide some explanation for the deficient provision of discharge information found in our quantitative inpatient study.¹¹ During interviews, senior doctors reported often being so busy

1
2
3 that they would pass the duty of writing discharge notes to interns or nurses. Additionally, it
4
5 seemed that more time was spent on verbal communication; one nurse reported taking
6
7 approximately twenty minutes per patient to explain discharge instructions. Such practices
8
9 may be compromising the retention of key healthcare information, as global literature
10
11 suggests that patients can struggle to absorb verbal details provided during consultations.²⁶
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13 The potential implications of this are significant, given the associations we have found
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15 between failing to receive key documented discharge information and an increased likelihood
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17 of adverse events (Humphries, Jaganathan, Panniyammakal, *et al.* 2018).
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22 Another topic discussed by both participant groups was referral communication.
23
24 Reports revealed that that documented information was not always given to patients, and
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26 when it was, it was often in the form of minimal, hand-written notes on papers provided for
27
28 other purposes (e.g. prescription cards). These findings reflect results from other LMIC
29
30 studies that have evidenced the exchange of poor-quality referral documents.²⁷⁻²⁹ A small
31
32 number of doctors in our study reported calling HCPs to discuss a referral case, but this was
33
34 dependent on how well they knew the patient and/or HCP. These deficits are perhaps
35
36 unsurprising given that multiple HCPs reported that there was an absence of structured
37
38 systems and education provided for handover communication. These findings concur with the
39
40 few previous descriptions from India of an absence of training and protocols for handover
41
42 practices.⁸⁻¹⁰
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48 Another key area of discussion was the use of patient-held medical documents. Whilst
49
50 many inpatients reportedly transported records to HCP visits, doctors recalled seeing many
51
52 who did not bring information to hospital. This was problematic as if patients did not bring
53
54 their records then doctors had to gather details from scratch. It was also reported that
55
56 inpatient hospital records were not easily accessible and rarely retrieved. This lack of
57
58 available and accurate medical information carries notable risks for patient safety, as without
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3 key background and/or treatment details, critical oversights can be made that result in adverse
4 events.^{4 5 30} When asked about the potential utility of introducing patient-held record
5
6 booklets, patients were generally positive and felt that the inclusion of self-management
7
8 information would be beneficial. Doctors had mixed views but generally thought that they
9
10 could be useful if patients had positive attitudes towards their maintenance and use. Given the
11
12 unstructured, paper-based systems utilised across the study sites, this is a promising area for
13
14 development. Patient-held records have been used successfully in maternity care throughout
15
16 the world and have improved referral networks as well as patient satisfaction and
17
18 knowledge.¹⁷⁻²¹

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24 Other issues affecting handover communication were mentioned within each
25
26 participant group. For inpatients, some recalled receiving impolite treatment from hospital
27
28 doctors during admission. Additionally, a small number of patients were dissatisfied with the
29
30 take-home nutritional advice provided, as they felt it failed to take into account their socio-
31
32 economic deprivation. These results may be explained by the reported lack of communication
33
34 training in medical education, as well as a historic tendency for paternalistic physician
35
36 conduct in India.³¹ In other areas of India and Asia, research on HCP-patient communication
37
38 has also evidenced asymmetric power balances and patient dissatisfaction during both
39
40 inpatient and outpatient consultations.³² Such findings reveal the need for more patient-
41
42 centred communication, particularly for the poorer patients that make up a significant
43
44 proportion of public healthcare users. As for HCPs, during interviews many doctors
45
46 recognised the need for an increase in public healthcare resource provision, as well as
47
48 structured systems for information exchange. Some also discussed the promise of
49
50 implementing “e-health” systems, with a doctor in Kerala reporting that public healthcare
51
52 facilities across the state will be transitioning to computerised systems. Whilst our colleagues
53
54 from Kerala report that this development is in its early stages, it has great potential as similar
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3 systems have advanced the accessibility and quality of healthcare information across the
4
5 globe.^{33 34}
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10 **4.2 Strengths and limitations**

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14 A key strength of this study is that, as far as the authors are aware, it is the first to
15
16 qualitatively report on handover communication with and between levels of care in India. The
17
18 use of multiple sites and qualitative methodology has revealed a number of key issues that are
19
20 supported among the HIC and emerging LMIC literature, suggesting likely transferability to
21
22 other LMIC settings. Additionally, interviews with both patients and HCPs have provided an
23
24 overview of handover communication from a multiple important perspectives. The number of
25
26 interviews conducted helped to ensure data saturation for both participant groups and study
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28 credibility was strengthened via use of multi-analyst triangulation.²³
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33 With regard to limitations, recruitment challenges meant that patient participants were
34
35 predominantly older (i.e. 45yrs+). Therefore, experiences of younger patients could not be
36
37 thoroughly explored. In addition, the cross-cultural nature of this research may have resulted
38
39 in constraints during data collection and analysis; for example, the presence of in-group bias
40
41 could have affected participant's willingness to openly converse with a non-local
42
43 researcher.³⁵ Social desirability bias from the use of individual interviews and participant's
44
45 awareness that the interviewer was a public health professional may have also affected
46
47 truthfulness of the data.³⁶ However, the recurrence of themes indicating data saturation and
48
49 the finding that our results are supported by existing literature suggests this had minimal
50
51 impact.
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4.3 Conclusions and next steps

This study has found that handover communication for chronic NCD patients during care transitions and hospital admission is often fragmented. The critical barriers appear to be an absence of structured information exchange systems and HCP education. There is also a growing need for the government to strengthen the primary healthcare infrastructure in line with the declaration of Alma Alta.³⁷ This will greatly assist in increasing accessibility of care and reduce pressure on hospital services. It will also be required to address the United Nations sustainable development goals regarding universal health coverage and reducing premature deaths from NCDs.³⁸ In addition, the implementation of structured documentation, systems and training is urgently required to manage care transitions such as referral and discharge. Research from both HIC and LMIC settings has proven that such interventions can improve continuity and safety of care.^{4 10 27 39}

During HCP interviews, it was reported that public healthcare facilities in Kerala will be transitioning to computerised “e-health” information systems. Whilst this development holds promise, issues regarding patient access to healthcare information and information exchange between public and private providers are likely to remain an issue. Therefore, with regard to research recommendations, a mixed-methods pilot study exploring the design and implementation of patient-held record booklets is suggested. This idea was welcomed by Indian national and international experts, as well as patients and HCPs in our study areas and could improve patient self-management as well as communication and integration between HCPs.

Finally, given the rising burden of NCDs across LMICs, this research is timely and crucial for effective health systems development. It is important that further LMIC research is conducted to explore critical factors affecting quality, continuity and safety of care and to develop sustainable and cost-effective interventions.

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AUTHOR CONTRIBUTIONS

In order of the authors list: CH: Data curation, formal analysis, visualisation, writing (both original draft and final review and editing). SJ: Investigation, data curation, project administration, writing (review and editing). JP: Conceptualisation, funding acquisition, project administration, supervision, writing (review and editing). SS: Funding acquisition, project administration, supervision, writing (review and editing). SG(oenka): Funding acquisition, project administration, supervision, writing (review and editing). PD: Conceptualisation, funding acquisition, project administration, supervision, writing (review and editing). PG: Conceptualisation, data curation, funding acquisition, writing (review and editing). SG(reenfield): Funding acquisition, formal analysis, writing (review and editing). RL: Conceptualisation, funding acquisition, writing (review and editing). SMH:

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2
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4
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32 The authors of this manuscript have no competing interests to disclose.
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40 41 **ETHICS APPROVAL** 42 43

44 This study was reviewed and approved by the Centre for Chronic Disease Control
45
46 Independent Ethics Committee, India, and the Amrita Institute of Medical Sciences
47
48 Institutional Ethics Committee, India. Data archives will be stored at the University of
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50 Birmingham, in accordance with the University's code of practice.
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3 **DATA SHARING STATEMENT**
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7 No additional data are available.
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S1. Additional information regarding the Indian healthcare system

1. National context: structure of public healthcare system

The basic structure of the public healthcare system in India is as follows:¹

- National level: Ministry of Health and Family Welfare.
- State level: State Department of Health and Family welfare in each state.
- Regional level: covers 3 - 5 districts. Headed by State Directorate of Health.
- District level: Middle level management organisation serving as a link between the regional and state structures and the peripheral and PHC structures.
- Sub-divisional/Taluk level: Hospitals/hospitals with specialty care (Taluk headquarters hospitals). Healthcare services are rendered via the office of Assistant District Health and Family Welfare Officer.
- Community level: CHCs that cater for 80,000-120,000 population and PHCs that cover approximately 20,000 – 30,000 population (often upgrades of rural dispensaries).

2. Public healthcare across India

The quality of public healthcare across India varies notably between states and between urban and rural areas. Aside from some pockets of excellence in a select few states, the public sector is generally falling short of meeting the basic healthcare needs of the growing population. Some of the main reasons for this include: services being too far away, a lack of trained personnel and supplies, and limited facility opening times that are often unreliable.²

With regard to primary health centres, government estimates indicate that 10% are without a

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3 doctor, 37% are without a laboratory technician and 25% are without a pharmacist.³ Issues
4 with public health centres are particularly rife within poor communities, where facilities have
5 been found to be closed more than half the time and lack basic medical supplies. Public
6 facilities are the often the only source of qualified healthcare professionals in rural areas,
7 which is where much of the poor live.²
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18 **3. National context: private healthcare**

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20 Public healthcare in India has lacked funding over a series of decades, resulting from a lack
21 of prioritisation from economic planners. Therefore, the increasing prevalence of chronic,
22 non-communicable diseases alongside unresolved challenges of infectious diseases has
23 placed more strain on public health systems than what can feasibly be managed. The private
24 healthcare sector has subsequently proliferated to meet rising needs, expectations and
25 incomes and surveys indicate that private healthcare providers now dominate service
26 provision. According to reports, public facilities provided just 20% of primary and
27 community-level healthcare services, and 40% of hospital visits in 2004-05 (down from 25%
28 and 60% respectively in 1986-87).² At the higher end of the market the private sector has
29 world class facilities that have grown substantially. As a result, hospital care is now an export
30 sector for medical tourism that cares for approximately 200,000 foreign patients per year.⁴
31 However, private healthcare providers are poorly regulated, with uneven quality across
32 facilities. This is resulting in a large number of private facilities delivering services without
33 appropriate equipment or expertise. Additionally, although visiting private providers is
34 preferential for many, it is common for high out-of-pocket costs to be incurred; more than
35 40% of all private hospital inpatients have to borrow money or sell assets in order to fund
36 their care.⁵ This means that many poorer patients are unable to access healthcare while others
37 fall into poverty as a result of spending.
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S2. S1. Additional information regarding the study settings

2.1.1. Study setting - Himachal Pradesh

Himachal Pradesh is principally a rural state in northern India. It has a population of 6.86 million people and the average literacy rate is 83.3%, which is higher than the national average (74%). However, rates remain notably lower for women compared to men (76.6% vs. 90.8%, respectively).⁶ Private HCPs are less prevalent in Himachal Pradesh and public healthcare utilisation remains relatively high.⁷ A recent study found that the availability of public health services in the state was deemed adequate as compared to standards of other hill states, but with an unequal distribution of resources across regions.⁸

2.1.2 Study setting - Kerala

Kerala state is in the south-west of India. It has a population of 34.8 million people and a greater than national average urban-based population of 47.7%. It has the highest overall literacy rate in India (93.9%; men 96.1%, women 92.1).⁹ There are a relatively large number of government healthcare facilities in Kerala but the healthcare environment is becoming increasingly complex due to a growing presence of private healthcare providers. Despite this, public health facilities in Kerala are generally the first point of care and continue to deliver essential services.¹⁰

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S3. Qualitative interview topic guides (Dec 2014 – Oct 2015)

Interview topic guide for healthcare providers in the hospital (and community providers – reverse the order of asking section A and B)

Please explain your experience or observations in the circumstances below with patients with cardiovascular conditions, diabetes, chronic chest disease or other chronic conditions in your place of work:

A - Primary to secondary care:

1. In your experience, how frequently do patients bring notes from primary care when they come to the hospital? What type of note is it? (Forms, letters, prescription etc.)
2. Usually what type of information does it contain? (medication, past history, tests, etc.)
3. In what way is this referral information helpful/could be helpful, and how could it be improved? What do you think are the most important details to include in the referral information?
4. In the absence of patient records or referral notes, how do you decide what the patient has been taking medically?
5. How would you improve this situation – guide us on the problems and things that would help?
6. If these problems are sorted, how do you think we can encourage community and primary care doctors to send the information when they refer a patient? (i.e. motivators)

B - Secondary to Primary care:

7. If you or your colleagues have a system of sending information about the patient to the primary care providers (even if you do not know who this may be), what form does this information take?
8. In your opinion, what way is the information you send to primary care doctors helpful for the care of the patient, and how could these communications be improved?
9. When seeing patients at outpatient clinics, given the fact that the patients may not come back, what do you do to ensure they continue their correct treatment?
10. How would you improve this situation – guide us on the problems and things that would help?

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3 **Interview topic guide for healthcare providers (continued)**
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- 6 11. If these problems are sorted, how do you think we can encourage hospital doctors to
7 send the information when they refer a patient? (motivators)
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12 **C - Training:**
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- 14 12. As far as you recall, as an undergraduate or while working, have you had any structured
15 training for hospital shifts or for transfer for information at shift times in hospital
16 practice? If so, what were you trained to do?
17
18 13. As far as you recall, as an undergraduate or while working, have you had any structured
19 training for writing referral notes when referring patients to hospitals or for writing
20 handover notes for primary care doctors to pass on patient's clinical information to them?
21 If so, what where you trained to do?
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27 **D - Health care provider information to be collected:**
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- 29 • Speciality
30 • Years of relevant experience
31 • Place of work
32 • Designation
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44 **Interview topic guide for patients and carers**
45

46 Please explain your experience or observations in the below circumstances with health care
47 providers in your town in small clinics near you or at hospitals:

48 **A - Primary to secondary care:**
49

- 50 1. Is there any way that your treating community doctor tells the hospital about your
51 condition when they refer you there?
52
53 2. Do you think this is important and why? (please explore if they think it is or is not
54 important)
55
56 3. How do you share information with the hospital doctor about your previous medical
57 treatments and conditions (in other hospitals or when seeing your local doctors)?
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3 **Interview topic guide for patient and carer (continued)**
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7 **B - Secondary to primary care:**
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- 9
10 a. How does your local treating doctor/close to your house, get to know about what was
11 done in hospital when you were seen at the outpatient clinic and/or admitted?
12
13 b. Do you think this is important and why?
14
15 c. What do you do with your medical papers when you get home after being seen at the
16 outpatient clinic?
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22 **C - Secondary care to patient:**
23

- 24 d. What advice/instructions are you given when you see the doctor at the outpatient
25 clinic?
26
27 e. After you leave hospital, how do you know what to do to take best care of yourself
28 (for the months ahead)?
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34 **D - Participant information to be collected:**
35

- 36
37 • Age
38 • Gender
39 • Religion
40 • Highest level of education
41 • Condition(s)
42 • Years of having this conditions
43 • Place village and district
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S4. Qualitative interview topic guides (Oct 2015 – Dec 2015)

Interview topic guide for healthcare providers in the hospital (and community providers – reverse the order of asking section A and B)

Note to Researchers: if a healthcare provider states they have limited time to be interviewed, please use the shortened topic guide below.

Please explain your experience or observations in the circumstances below with patients with cardiovascular conditions, diabetes, chronic chest disease or other chronic conditions in your place of work:

A - Primary to secondary care:

14. In your experience, how frequently do patients bring notes from primary care when they come to the hospital? What type of note is it? (Forms, letters, prescription etc.)
15. Usually what type of information does it contain? (medication, past history, tests, etc.)
16. In what way is this referral information helpful/could be helpful, and how could it be improved? What do you think are the most important details to include in the referral information?
17. In the absence of patient records or referral notes, how do you decide what the patient has been taking medically?
18. How would you improve this situation – guide us on the problems and things that would help? Do you think patient-held booklets for storing and transporting medical records would be useful?
19. If these problems are sorted, how do you think we can encourage community and primary care doctors to send the information when they refer a patient? (i.e. motivators)

B - Secondary to Primary care:

20. If you or your colleagues have a system of sending information about the patient to the primary care providers (even if you do not know who this may be), what form does this information take?
21. In your opinion, what way is the information you send to primary care doctors helpful for the care of the patient, and how could these communications be improved?

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3 **Interview topic guide for healthcare providers (continued)**
4

- 5
6 22. When seeing patients at outpatient clinics, given the fact that the patients may not
7 come back, what do you do to ensure they continue their correct treatment?
8
9 23. How would you improve this situation – guide us on the problems and things that
10 would help? Do you think patient-held booklets for storing and transporting medical
11 records would be useful?
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14 24. If these problems are sorted, how do you think we can encourage hospital doctors to
15 send the information when they refer a patient? (motivators)
16
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18 **C - Training:**
19

- 20 25. As far as you recall, as an undergraduate or while working, have you had any structured
21 training for hospital shifts or for transfer for information at shift times in hospital
22 practice? If so, what were you trained to do?
23
24 26. As far as you recall, as an undergraduate or while working, have you had any structured
25 training for writing referral notes when referring patients to hospitals or for writing
26 handover notes for primary care doctors to pass on patient's clinical information to them?
27 If so, what where you trained to do?
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33 **D - Health care provider information to be collected:**
34

- 35 • Speciality
36 • Years of relevant experience
37 • Place of work
38 • Designation
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42

43 **Shortened interview topic guide for healthcare providers**
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- 45 1. Would you prefer it if patients came to consultations with all their previous medical
46 records?
47
48 2. Will having previous records of patients in a booklet format help with clinical
49 management?
50
51
52 3. Do you think that introducing patient-held booklets for recording key information
53 (e.g. blood pressure, sugar levels etc.) would help clinical management?
54
55 4. Would you like to write in patient-held booklets about patients' clinical management?
56
57
58 5. Please share your views on how to improve the clinical management of chronic non-
59 communicable disease patients
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4 **Shortened interview topic guide for healthcare providers (continued)**
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8 **Health care provider information to be collected:**

- 9
- 10 • Speciality
 - 11 • Years of relevant experience
 - 12 • Place of work
 - 13 • Designation
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21 **Interview topic guide for patients and carers**

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23 *Note to Researchers: if a patient states they have limited time to be interviewed, please use*
24 *the shortened topic guide below.*
25
26
27

28 Please explain your experience or observations in the below circumstances with health care
29 providers in your town in small clinics near you or at hospitals:
30

31 **A - Primary to secondary care:**

- 32
- 33 4. Is there any way that your treating community doctor tells the hospital about your
34 condition when they refer you there?
 - 35 5. Do you think this is important and why? (please explore if they think it is or is not
36 important)
 - 37 6. How do you share information with the hospital doctor about your previous medical
38 treatments and conditions (in other hospitals or when seeing your local doctors)?
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48 **B - Secondary to primary care:**

- 49
- 50 a. How does your local treating doctor/close to your house, get to know about what was
51 done in hospital when you were admitted?
 - 52 b. Do you think this is important and why?
 - 53 c. What do you do with your medical papers when you get home after being seen at the
54 hospital?
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3 **Interview topic guide for patients and carers (continued)**
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7 **C - Secondary care to patient:**
8

- 9 d. What advice/instructions are you given when you see the doctor at the hospital?
10
11
12 e. After you leave hospital, how do you know what to do to take best care of yourself
13 (for the months ahead)?
14
15 f. Do you think that having a patient-held booklet for storing and transporting medical
16 records would be useful? Would you carry a record booklet to healthcare
17 appointments?
18
19
20 g. Do you think that having a record booklet would help your self-management?
21
22
23 h. Would you like to get detailed written information about your medicines, follow-up
24 information and advice on lifestyle and self-management?
25
26
27 i. Do you think that having information sheets would help your self-management?
28
29
30

31 **D - Participant information to be collected:**
32

- 33
34 • Age
35 • Gender
36 • Religion
37 • Highest level of education
38 • Condition(s)
39 • Years of having this conditions
40 • Place village and district
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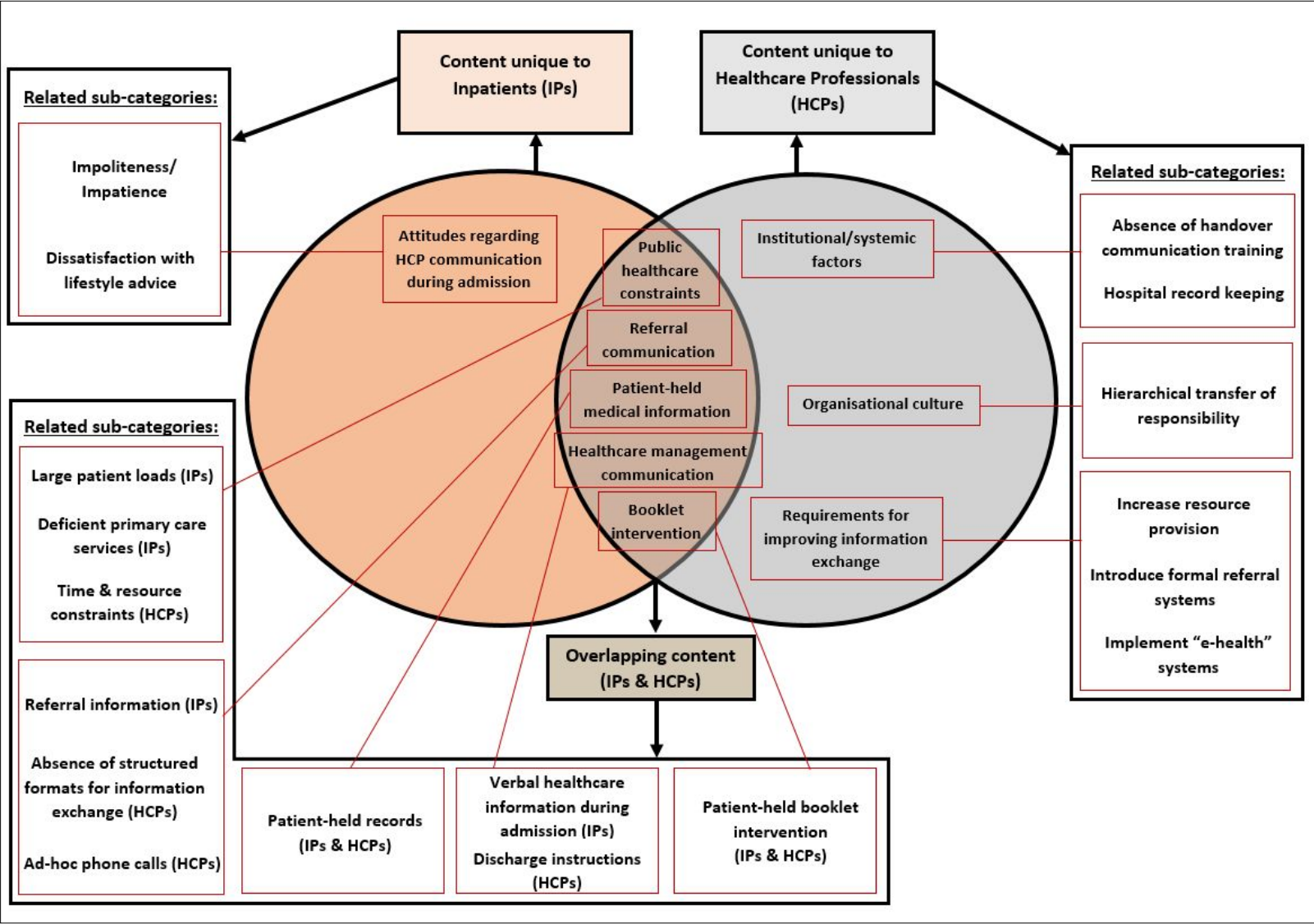
Shortened interview topic guide for patients and carers

1. What advice/instructions are you given when you see the doctor at the outpatient clinic?
2. Do you think that having a patient-held booklet for storing and transporting medical records would be useful? Would you carry a record booklet to healthcare appointments?
3. Do you think that having a record booklet would help you to manage your self-care at home?
4. Do you think that having information sheets would help you to manage your self-care at home?
5. Would you like to get detailed written information about your medicines, follow-up and lifestyle advice?

Participant information to be collected:

- Age
- Gender
- Religion
- Highest level of education
- Condition(s)
- Years of having this conditions
- Place village and district

S5. Figure 1. Similarities and differences between the content of IP & HCP data with related sub-categories



Reporting checklist for qualitative study.

Based on the SRQR guidelines.

Instructions to authors

Complete this checklist by entering the page numbers from your manuscript where readers will find each of the items listed below.

Your article may not currently address all the items on the checklist. Please modify your text to include the missing information. If you are certain that an item does not apply, please write "n/a" and provide a short explanation.

Upload your completed checklist as an extra file when you submit to a journal.

In your methods section, say that you used the SRQR reporting guidelines, and cite them as:

O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. Standards for reporting qualitative research: a synthesis of recommendations. *Acad Med.* 2014;89(9):1245-1251.

	Reporting Item	Page Number
#1	Concise description of the nature and topic of the study identifying the study as qualitative or indicating the approach (e.g. ethnography, grounded theory) or data collection methods (e.g. interview, focus group) is recommended	1
#2	Summary of the key elements of the study using the abstract format of the intended publication; typically	2-3

1			includes background, purpose, methods, results and	
2				
3			conclusions	
4				
5				
6	Problem formulation	#3	Description and significance of the problem /	4-5
7				
8			phenomenon studied: review of relevant theory and	
9				
10			empirical work; problem statement	
11				
12				
13	Purpose or research	#4	Purpose of the study and specific objectives or	5
14	question		questions	
15				
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19	Qualitative approach	#5	Qualitative approach (e.g. ethnography, grounded	6-10
20	and research paradigm		theory, case study, phenomenology, narrative research)	
21			and guiding theory if appropriate; identifying the	
22			research paradigm (e.g. postpositivist, constructivist /	
23			interpretivist) is also recommended; rationale. The	
24			rationale should briefly discuss the justification for	
25			choosing that theory, approach, method or technique	
26			rather than other options available; the assumptions	
27			and limitations implicit in those choices and how those	
28			choices influence study conclusions and transferability.	
29			As appropriate the rationale for several items might be	
30			discussed together.	
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46	Researcher	#6	Researchers' characteristics that may influence the	7-10
47	characteristics and		research, including personal attributes, qualifications /	
48	reflexivity		experience, relationship with participants, assumptions	
49			and / or presuppositions; potential or actual interaction	
50			between researchers' characteristics and the research	
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1		questions, approach, methods, results and / or	
2		transferability	
3			
4			
5			
6	Context	#7 Setting / site and salient contextual factors; rationale	6
7			
8			
9	Sampling strategy	#8 How and why research participants, documents, or	6-7
10		events were selected; criteria for deciding when no	
11		further sampling was necessary (e.g. sampling	
12		saturation); rationale	
13			
14			
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19	Ethical issues pertaining	#9 Documentation of approval by an appropriate ethics	32
20	to human subjects	review board and participant consent, or explanation for	
21		lack thereof; other confidentiality and data security	
22		issues	
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29	Data collection methods	#10 Types of data collected; details of data collection	7-9
30		procedures including (as appropriate) start and stop	
31		dates of data collection and analysis, iterative process,	
32		triangulation of sources / methods, and modification of	
33		procedures in response to evolving study findings;	
34		rationale	
35			
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43	Data collection	#11 Description of instruments (e.g. interview guides,	7-9
44	instruments and	questionnaires) and devices (e.g. audio recorders) used	
45		for data collection; if / how the instruments(s) changed	
46		over the course of the study	
47	technologies		
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53	Units of study	#12 Number and relevant characteristics of participants,	11-13
54		documents, or events included in the study; level of	
55		participation (could be reported in results)	
56			
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1	Data processing	#13	Methods for processing data prior to and during	9-15
2			analysis, including transcription, data entry, data	
3			management and security, verification of data integrity,	
4			data coding, and anonymisation / deidentification of	
5			excerpts	
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13	Data analysis	#14	Process by which inferences, themes, etc. were	9-10
14			identified and developed, including the researchers	
15			involved in data analysis; usually references a specific	
16			paradigm or approach; rationale	
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23	Techniques to enhance	#15	Techniques to enhance trustworthiness and credibility	9-10
24	trustworthiness		of data analysis (e.g. member checking, audit trail,	
25			triangulation); rationale	
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31	Syntheses and	#16	Main findings (e.g. interpretations, inferences, and	11-25
32	interpretation		themes); might include development of a theory or	
33			model, or integration with prior research or theory	
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39	Links to empirical data	#17	Evidence (e.g. quotes, field notes, text excerpts,	18-25
40			photographs) to substantiate analytic findings	
41				
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43				
44	Intergration with prior	#18	Short summary of main findings; explanation of how	26-29
45	work, implications,		findings and conclusions connect to, support, elaborate	
46	transferability and		on, or challenge conclusions of earlier scholarship;	
47	contribution(s) to the		discussion of scope of application / generalizability;	
48	field		identification of unique contributions(s) to scholarship in	
49			a discipline or field	
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1	Limitations	#19	Trustworthiness and limitations of findings	29
2				
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4	Conflicts of interest	#20	Potential sources of influence of perceived influence on	32
5			study conduct and conclusions; how these were	
6			managed	
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11				
12	Funding	#21	Sources of funding and other support; role of funders in	32
13			data collection, interpretation and reporting	
14				
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BMJ Open

Patient and healthcare provider knowledge, attitudes and barriers to handover and healthcare communication during chronic disease inpatient care in India: A qualitative exploratory study

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2018-028199.R1
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Complete List of Authors:	Humphries, Claire; University of Birmingham, UK, Institute of Applied Health Research Jaganathan, Suganthi ; Centre for Chronic Disease Control Panniyammakal, Jeemon ; Centre for Chronic Disease Control Singh, Sanjeev; Amrita Institute of Medical Sciences and Research Centre; Amrita Institute of Medical Sciences and Research Centre Goenka, Shifalika; Public Health Foundation of India Dorairaj, Prabhakaran ; Centre for Chronic Disease Control Gill, Paramjit ; University of Warwick Greenfield, Sheila; University of Birmingham, Primary Care Clinical Sciences Lilford, Richard; University of Warwick, Division of Health and Population Sciences Manaseki-Holland, Semira; University of Birmingham,
Primary Subject Heading:	Public health
Secondary Subject Heading:	Health services research, Qualitative research
Keywords:	International health services < HEALTH SERVICES ADMINISTRATION & MANAGEMENT, Quality in health care < HEALTH SERVICES ADMINISTRATION & MANAGEMENT, PUBLIC HEALTH, QUALITATIVE RESEARCH

SCHOLARONE™
Manuscripts

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4 1 **Patient and healthcare provider knowledge,**
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7 2 **attitudes and barriers to handover and healthcare**
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10 3 **communication during chronic disease inpatient**
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23 6 Claire Humphries^{1¶}, Suganthi Jaganathan^{2,3¶}, Jeemon Panniyammakal^{2,3,4}, Sanjeev
24 7 Singh⁵, Shifalika Goenka^{2,3}, Prabhakaran Dorairaj^{2,3}, Paramjit Gill⁵, Sheila
25 8 Greenfield¹, Richard Lilford⁶, Semira Manaseki-Holland^{1*}
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30 10 ¹ Institute of Applied Health Research, University of Birmingham, Birmingham, West
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27 **ABSTRACT**

28 **Objectives** To investigate patient and healthcare provider (HCP) knowledge,
29 attitudes and barriers to handover and healthcare communication during inpatient
30 care and explore interventions for improving storage and transfer of healthcare
31 information.

32 **Methods** *Design:* Qualitative study comprising 41 semi-structured, individual
33 interviews. Thematic analysis using the Framework Method with analyst
34 triangulation. *Setting:* Three hospitals in Himachal Pradesh and Kerala, India.
35 *Participants:* 20 male (n=10) and female (n=10) chronic non-communicable disease
36 (NCD) patients and 21 male (n=15) and female (n=6) HCPs. Purposive sampling
37 was used to identify patients with chronic NCDs (Chronic Respiratory Disease,
38 Cardiovascular Disease, Diabetes or Hypertension) and HCPs.

39 **Results** Chronic NCD patient themes: (1) *Public healthcare service characteristics;*
40 (2) *HCP-patient communication;* (3) *Attitudes regarding medical information.* HCP
41 themes: (1) *System factors;* (2) *Information exchange practices;* (3) *Quality*
42 *improvement strategies.* Both patients and HCPs recognised public healthcare
43 constraints that increased pressure on hospitals and subsequently limited
44 consultation times. Systemic issues reported by HCPs were a lack of formal
45 handover systems, training and accessible hospital-based records. Healthcare
46 management communication during admission was inconsistent and lacked patient-
47 centeredness, evidenced by patient reports of varying levels of information received
48 and some dissatisfaction with lifestyle advice. Senior doctors reported passing the
49 writing discharge notes to juniors when busy with high patient loads. Nurses reported
50 providing the majority of discharge instructions to patients verbally. Patient-held

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3 51 documents served as a vehicle for information exchange between HCPs, but were
4
5 52 not always transported. HCPs and patients expressed positive views towards
6
7 53 introducing patient-held booklets to improve organisation and transfer of documents.
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9
10 54 **Conclusions** Handover and healthcare communication during chronic NCD inpatient
11
12 55 care is suboptimal. Structured information exchange systems and HCP training are
13
14 56 required to improve continuity and safety of care during critical transitions such as
15
16 57 referral and discharge. Findings suggest that patient-held booklets may also assist in
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18 58 enhancing handover and patient-centred practices.
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STRENGTHS AND LIMITATIONS OF THIS STUDY

- As far as the authors are aware, this is the first study to qualitatively explore factors affecting multiple areas of handover communication for chronic disease inpatients in India.
- The number of interviews conducted with both patients and healthcare providers ensured data saturation and provided a variety of critical perspectives.
- Analyst triangulation corroborated data analysis and strengthened the credibility of the study.
- The accuracy of recall of inpatients interviewed at home (i.e. following hospital discharge) may have been limited by the delay between study recruitment and subsequent data collection.
- Awareness of the interviewer's context as a public health researcher may have resulted in participants distorting their responses to minimise critical judgement.

1. INTRODUCTION

The increasing burden of chronic, non-communicable diseases (NCDs) such as cardiovascular disease, diabetes and chronic respiratory disease has become a global pandemic that is disproportionately affecting low and middle-income countries (LMICs).¹ This is placing great demand on under-resourced health systems that can only be relieved by employing efficient and integrated approaches to healthcare management. Central to efficiency and integration in healthcare is effective handover communication, which involves the exchange of patient-specific information between healthcare providers (HCPs) and between HCPs and patients/carers.²

Between HCPs, information exchange is critical during clinical handovers, which are the points in care where information, responsibility and accountability for patient care are transferred from one HCP to another.³ Such exchange is vital because safe and effective treatment can only be maintained if all relevant information has been shared and understood.⁴ A wealth of research from high-income countries (HICs) has evidenced the association between communicative breakdowns during care transitions and risks to patient safety. Such risks are pervasive throughout many aspects of inpatient care and include delays in diagnosis, medication errors and life-threatening adverse events.^{5 6} In particular, one-in-five patients experience adverse events following hospital discharge and research has established a link between such events and deficient handover communication.⁷⁻¹⁰ Effective information exchange between HCPs and patients is also vital, as patients can provide valuable information to HCPs involved at various stages of their care pathway.⁴ Excellent HCP-patient healthcare communication also empowers patients to become active participants in their healthcare management; this is a key aspect of

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3 131 patient-centred care, which has been linked to improved patient satisfaction and
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5 132 outcomes.¹¹
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8 133 Despite the established importance of handover communication for health
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10 134 systems functioning and patient safety in HICs, there has been a relative dearth of
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12 135 LMIC-based research on this topic.¹² One recent (2019) study from South Africa
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14 136 found inadequate discharge planning to be a significant contributor to avoidable
15
16 137 causes of hospital readmission.¹³ Across India, a handful of single-site studies have
17
18 138 evaluated and described deficiencies in information exchange during hospital shift-
19
20 139 change and discharge.¹⁴⁻¹⁶ The current study forms part of a series completed for a
21
22 140 project investigating handover and continuity of care for chronic NCD patients in
23
24 141 Kerala and Himachal Pradesh states, India. The first study to have been
25
26 142 disseminated focussed on outpatient care, which found issues of sub-optimal
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28 143 recording of information within patient-held medical documents and an absence of
29
30 144 formal systems for exchanging information between levels of care.¹⁷
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35 145 Given these emerging challenges and the established critical link between
36
37 146 deficient handover communication and risks to inpatient safety, the current study
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39 147 was conducted to gain novel insight into the transfer of healthcare information during
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41 148 chronic NCD inpatient care across the same study areas of India. The primary
42
43 149 objective was to explore knowledge, attitudes and barriers to handover and
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45 150 healthcare communication during the following points of inpatient care:
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- 49 151 • Referral/transfer (i.e. communication between HCPs and between HCPs and
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51 152 patients when referring and/or transferring patients)
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53 153 • Hospital admission and discharge (i.e. communication between HCPs and
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55 154 patients regarding condition, treatment and/or management during hospital
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57 155 admission and discharge)
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3 156 A secondary objective was to explore possible interventions to improve the
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6 157 storage and transfer of critical healthcare information.
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13 14 15 160 **2. METHODS**

16 17 18 161 **2.1 Overview**

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22 162 We report findings from a qualitative study of handover communication for
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24 163 chronic NCD inpatients in two Indian states. This study was conducted from
25
26 164 December 2014 to November 2015 across three hospitals: one rural secondary-care
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28 165 hospital in Himachal Pradesh state, and one peri-urban secondary-care and one
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30 166 urban tertiary-care hospital in Kerala state. These settings were selected to capture
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32
33 167 a range of hospital types within different geographical settings. We selected public
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35 168 rather than private facilities as this is where a large proportion of socio-economically
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37 169 vulnerable patients access healthcare. See supplementary files “S1” and “S2” for
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39 170 further information regarding the Indian healthcare system and study settings.
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44 45 46 172 **2.2 Participant recruitment**

47 48 49 50 173 **2.2.1 Patients**

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53 174 Inpatients were recruited opportunistically from hospitals by trained research
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55 175 assistants (n=6).¹⁸ Purposive sampling was used to identify individuals who met the
56
57 176 following inclusion criteria: adults (18 years+),¹⁹ admitted to hospital within 24 hours
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59 177 of a researcher first meeting them, due to complications from one of the following
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3 178 chronic NCDs: cardiovascular disease, chronic respiratory disease, diabetes
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5 179 mellitus, or hypertension. The identification process took place via researchers
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8 180 approaching ward nurses and asking them about patient demographic and
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10 181 admission details; patients were excluded if judged too unwell to participate by ward
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12 182 nurses. Patients who met the inclusion criteria were provided with verbal and
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14 183 documented study information. Written consent was obtained from literate patients.
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17 184 For illiterate patients, oral consent was obtained along with a thumbprint and
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19 185 signature from a literate witness (i.e. family member/carer) in line with World Health
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21 186 Organisation guidelines.²⁰ Inpatients were recruited until theoretical saturation was
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24 187 achieved;²¹ A total of 20 inpatients participated.
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189 **2.2.2 Healthcare Professionals**

190 Healthcare professionals (HCPs) were recruited from study hospitals by
191 trained research assistants (n=6). Due to the busy nature of the study settings,
192 opportunistic sampling was used to recruit as many HCPs as possible with a range
193 of roles and experience.¹⁸ During recruitment, if HCPs stated they were too busy to
194 answer questions they were marked as “unavailable” and not approached again that
195 day - this did not exclude them from participating at another time. HCPs were also
196 recruited until theoretical saturation was achieved;²¹ A total of 21 HCPs participated.
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198 **2.3 Sample Size**

199 As well as saturation being reached for both participant groups independently,
200 the resulting sample size of 41 participants for this study was in accordance with

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3 201 Baker and Edwards' review of sample sizes utilised in qualitative literature, indicating
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5 202 it was sufficient for achieving overall data saturation.²²
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11 204 **2.4 Data collection**

15 205 The inpatient data analysed for this study is independent from the outpatient
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17 206 study and was collected using separate topic guides. Regarding HCP data, this
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19 207 study involves secondary analysis of HCP interviews (n=17) included in the
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21 208 outpatient study from participants who were also involved in inpatient care. A small
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23 209 number of additional interviews with HCPs solely involved in inpatient care (n=4)
24
25 210 have also been analysed in this study. All HCP interviews in the India handover
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27 211 project were conducted within the same study period and used the same topic guide
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29 212 (as most HCPs in the study areas worked with both outpatients and inpatients on a
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31 213 daily basis).
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36 214 All interview data was collected entirely by the lead Indian researcher (SJ – an
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38 215 experienced public health researcher) who was familiar with, but not local to, all
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40 216 study areas and fluent in all local Indian dialects and English. Full consideration was
41
42 217 given prior to and throughout data collection to ensure that SJ was aware of the
43
44 218 potential limitations of working with participants from culturally and linguistically
45
46 219 diverse backgrounds. SJ was not involved in patient treatment or previously known
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48 220 to HCPs.
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53 221 The majority (n=16) of patient interviews took place in study hospitals. Due to
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55 222 a lack of private spaces, they were conducted on inpatient wards in as quiet and
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57 223 private a manner as possible. All participants consented to this and it was ensured
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59 224 that HCPs were not present during inpatient interviews. In addition, a small number
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3 225 of patient interviews (n=4) took place in patients' homes either five weeks (n=2) or
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5 226 four months (n=2) following hospital discharge, as this was more convenient for them
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7 227 (i.e. during recruitment they were in the process of being discharged and leaving
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9 228 hospital). The specific follow-up times coincided with community visits being
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11 229 completed for another quantitative study within the India handover project, which the
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13 230 four patients were also participating in. All HCP interviews took place in hospital
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15 231 offices. Interviews with patients and HCPs were conducted in either Hindi, English,
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17 232 Malayalam or a mixture depending on interviewee preference and audio recorded
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19 233 using a digital Dictaphone.
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24 234 Data collection took place in two stages. In the first stage (December 2014–
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26 235 October 2015), pre-prepared topic guides were used to guide interviews (see
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28 236 supplementary file “S3”). These were developed using relevant handover literature
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30 237 and local knowledge of health systems functioning within the study areas. They were
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32 238 also piloted over three rounds prior to commencement of data collection to ensure
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34 239 they were clear as well as culturally and contextually appropriate. Patient topic
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36 240 guides included open-ended questions focussing on healthcare utilisation,
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38 241 experiences and attitudes of healthcare visits and information exchange. The HCP
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40 242 topic guides differed slightly to capture information on health systems policies and/or
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42 243 practices; it also included questions regarding handover training and potential
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44 244 interventions for improving practices.
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50 245 Following the first stage of data collection, on the 11th of October 2015, a
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52 246 handover expert's meeting took place in Delhi, India to present preliminary findings
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54 247 and discuss possible interventions. Researchers from the University of Birmingham
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56 248 and University of Warwick (UK) facilitated the presentation of results and group
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58 249 discussions at the meeting. Representatives (n=27) from the following international,
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3 250 Indian national and state-level organisations participated: The World Health
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5 251 Organisation; The World Bank; ACCESS Health International; The Ministry of Health
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7 252 and Family Welfare; The Public Health Foundation of India; The National Centre for
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9 253 Disease Control; The Centre for Chronic Disease Control; The National Health
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11 254 System Resource Centre; The All India Institute of Medical Sciences; Aga Khan
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13 255 Health Services; AMRITA Institute of Medical Sciences and Fortis Hospitals. During
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15 256 discussions, a consensus was reached that patient-held booklets were likely to be an
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17 257 acceptable and sustainable intervention to improve information exchange. This was
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19 258 based on the international success of similar patient-held records used in maternal
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21 259 healthcare around the world.²³⁻²⁷ It also took into account the delays in developing
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23 260 universal electronic information systems and the fact that such systems will not
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25 261 necessarily address the quality of communication between HCPs and patients.
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27 262 Overall, it was opted as the most pragmatic, cost-effective intervention and multiple
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29 263 experts felt that booklets could also improve patient self-management if they
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31 264 contained disease-specific advice.
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38 265 Therefore, following the meeting the second stage of qualitative data
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40 266 collection (October–November 2015) commenced. Topic guides were updated to
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42 267 include questions regarding the utility of patient-held booklets (see supplementary
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44 268 file “S4”). In addition, if participants stated they had limited time then researchers
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46 269 interviewed them using a shortened topic guide containing targeted questions on
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48 270 patient-held booklets (see supplementary file “S4”).
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56 272 **2.5 Data Analysis**

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3 273 All audio recordings of interviews were transcribed verbatim and, if necessary,
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5 274 translated into English by SJ. All translations were crosschecked for accuracy by a
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8 275 qualitative expert and co-author in India (SG), who was also familiar with the local
9
10 276 context and fluent in all languages utilised during interviews. Following this, all
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12 277 transcripts were sent to the lead UK researcher (CH – public health PhD student) for
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14 278 analysis. CH became familiar with all study sites prior to analysis during research-
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16 279 related visits that were facilitated by the Public Health Foundation of India and the
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18 280 Ministry of Health and Family Welfare in Kerala; visits took place after participation in
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20 281 the handover expert's meeting in Delhi.
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24 282 Data was analysed using the Framework Method,²⁸ as this is the method most
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26 283 commonly used for semi-structured interview transcripts. An inductive thematic
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28 284 approach to analysis utilised in Grounded Theory was employed,^{29 30} which focused
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30 285 on analysing interviews in their entirety and identifying concepts relevant to handover
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32 286 and healthcare communication during inpatient care that emerged from interviews.
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34 287 Analysis occurred through the following stages central to the Framework Method:
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36 288 transcription, familiarisation, coding, charting, and interpretation. Over a one-month
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38 289 period, familiarisation with the data took place via slow reading of transcripts and CH
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40 290 consulted with SJ to gain a clear understanding of interview contexts. Once this was
41
42 291 complete, coding began and two transcripts were chosen at random from each batch
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44 292 of interviews (i.e. 2 inpatients and 2 HCP transcripts) for independent coding by an
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46 293 additional UK analyst (SG – professor of medical sociology with expertise in cross-
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48 294 cultural research) for analyst triangulation.³¹ Inpatient and HCP transcripts were
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50 295 coded separately in order to be able to assess similarities and differences between
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52 296 participant groups - Inpatient transcripts were coded first. The coding process
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54 297 involved further familiarisation with the data, followed by open coding where certain
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3 298 transcript content was highlighted and allocated descriptive labels (codes) to
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5 299 interpret the phenomena identified in the text. The development of codes and
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7 300 themes was entirely data-led and analysed manually.³²
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11 301 Microsoft Excel was used to organise participant codes. CH created initial
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13 302 categories by clustering similar codes developed from the two randomly selected
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15 303 inpatient and HCP transcripts. CH and the additional analyst (SG) then met to
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17 304 discuss their analyses. As both had produced similar codes and concepts, the
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19 305 categories that were created were mutually agreed upon. CH then continued with
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21 306 category development until all transcripts had been coded and inserted onto the
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23 307 spreadsheet. Following analysis of 20 inpatient and 26 HCP transcripts, no new
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25 308 categories had been produced. This served as confirmation that data saturation had
26
27 309 been met.²¹
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33 310 Following coding, categories were grouped into subcategories and linked to
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35 311 produce themes. Then, via the process of charting,^{28 32} themes for each participant
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37 312 group were used to create a framework matrix into which participants' quotes were
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39 313 inserted, corresponding to their representative subcategory. This provided a visual
40
41 314 representation of themes, which facilitated the mapping and interpretation of the
42
43 315 data. After completing separate analysis of patient and HCP data, results of both
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45 316 participant groups were compared to assess similarities and differences between
46
47 317 their reports of knowledge, attitudes and barriers to handover and healthcare
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49 318 communication. A Venn diagram was used to summarise the separate and
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51 319 overlapping content, which was linked to sub-categories from original themes.
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59 321 **2.7 Patient and public involvement**

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3 322 Patients and the public were not involved in the initial design of this study.
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5 323 Patients and carers were first involved during the pilot phase prior to formal data
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7 324 collection, where the topic guides, consent and information sheets were piloted over
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9 325 three rounds. During this time, they were consulted and given the opportunity to
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11 326 provide feedback in order to ensure the study materials were comprehensible and
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13 327 culturally and contextually appropriate. Patients and the public were not involved in
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15 328 any other aspect of the study recruitment or conduct, but findings have been
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17 329 disseminated publicly via an experts meeting (including professionals working with
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19 330 patient groups) and open access web pages.
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333 **3. RESULTS**

334 **3.1 Inpatient characteristics**

335 20 male (n=10) and female (n=10) inpatients aged between 25 and 71 were
336 interviewed. Participants' background characteristics were varied (Table 1).
337 Inpatients completed interviews in English (n=11), Hindi (n=4), Malayalam (n=4) and
338 a mixture of Hindi and English (n=1).

Table 1. Inpatient characteristics

Characteristics	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	N (%)
Age	65	45	70	58	71	56	57	70	55	25	72	50	55	69	70	50	70	70	70	70	25-71
Sex																					
Male	✓	✓	✓	✓	✓				✓	✓	✓	✓				✓					10 (50)
Female						✓	✓	✓					✓	✓	✓		✓	✓	✓	✓	10 (50)
Literacy																					
Illiterate								✓					✓		✓	✓	✓	✓	✓	✓	8 (40)
Literate	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓							12 (60)
Education Level																					
None/minimal primary school-level								✓				✓	✓		✓	✓	✓	✓	✓	✓	9 (45)
Completed lower primary school					✓		✓														2 (10)
Completed upper primary school						✓															1 (5)
Completed secondary school									✓												1 (5)
Completed higher vocational studies																					0 (0)
University graduate (or above)	✓			✓						✓	✓										4 (20)
No data		✓	✓											✓							3 (15)
Employment Status																					
Employed		✓		✓	✓				✓			✓	✓	✓		✓					8 (40)
Unemployed						✓	✓	✓							✓		✓	✓	✓	✓	8 (40)
Student										✓											1 (5)
Retired	✓		✓								✓										3 (15)
Chronic NCD(s) (related to admission)																					
Chronic Respiratory Disease			✓	✓		✓		✓					✓			✓					6 (30)
Diabetes	✓													✓	✓	✓	✓	✓	✓	✓	8 (40)
Hypertension									✓		✓	✓			✓	✓	✓				6 (30)
Cardiovascular Disease (other than Hypertension alone)	✓	✓			✓		✓	✓	✓	✓	✓	✓									9 (45)
Language(s) used during Interview																					
English (only)	✓	✓	✓	✓										✓	✓	✓	✓	✓	✓	✓	11 (55)
Hindi (only)						✓	✓	✓	✓												4 (20)
Malayalam (only)										✓	✓	✓	✓								4 (20)
English & Hindi (mixture)					✓																1 (5)

3.2 Healthcare Professional characteristics

21 male (n=15) and female (n=6) HCPs aged between 22 and 55 were interviewed. HCP roles included doctors (n=17), nurses (n=2), pharmacists (n=1) and medical records officers (n=1). HCP qualifications and experience were varied (Table 2). HCPs completed interviews in English (n=15), Hindi (n=2), Malayalam (n=2) and a mixture of Hindi and English (n=2).

For peer review only

Table 2. Healthcare professional characteristics

Characteristics	1	2	3	4	5	6	7	8	9	11	14	15	18	19	20	21	22	23	24	25	26	N (%)	
Age	44	24	33	25	23	39	44	35	52	50	50	43	50	40	46	55	22	35	35	45	35	22-55	
Sex																							
Male	✓		✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓				✓	15 (71.4)	
Female		✓				✓		✓										✓	✓		✓	6 (28.6)	
Qualification/s*																							
Doctor of Medicine (MD)	✓		✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					13 (61.9)	
Master of Public Health (MPH)						✓																1 (4.8)	
Bachelor of Medicine (MBBS)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					17 (81.0)	
BSc Nursing																		✓			✓	2 (9.5)	
BSc Pharmacy																			✓			1 (4.8)	
Graduate (i.e. non-medical degree)																				✓		1 (4.8)	
Official position																							
Medical Superintendent						✓																1 (4.8)	
Chief Medical Officer									✓													1 (4.8)	
Medical Officer												✓										1 (4.8)	
Consultant	✓		✓				✓	✓					✓	✓	✓	✓	✓					9 (42.9)	
Surgeon		✓								✓												2 (9.5)	
General Medicine											✓											1 (4.8)	
Intern Doctor				✓	✓																	2 (9.5)	
Ward Nurse																		✓			✓	2 (9.5)	
Pharmacist																			✓			1 (4.8)	
Medical Records Officer																				✓		1 (4.8)	
Years of experience in position																							
<1		✓			✓																	2 (9.5)	
1 – 3				✓																		1 (4.8)	
4 – 6						✓		✓										✓		✓	✓	5 (23.8)	
7 – 10			✓				✓													✓		3 (14.3)	
>10	✓								✓	✓	✓	✓	✓	✓	✓	✓	✓					10 (47.6)	
Place of work																							
General Hospital		✓	✓	✓	✓									✓		✓	✓	✓	✓			9 (42.9)	
Regional Hospital	✓								✓	✓	✓		✓								✓	7 (33.3)	
Taluk Hospital						✓	✓	✓				✓			✓							5 (23.8)	
Language(s) used during interview																							
English (only)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					15 (71.4)	
Hindi (only)																					✓	✓	2 (9.5)
Malayalam (only)																		✓	✓			2 (9.5)	
English & Hindi (mixture)	✓											✓										2 (9.5)	

* HCPs could select more than one answer for this question

3.3 Charted Data

During analysis of patient and HCP data, three themes (with subcategories) emerged for each participant group. Patient themes were 1.Public healthcare service characteristics, 2. HCP to patient communication and 3.Attitudes regarding medical information (Table 3). HCP themes were 1.System factors, 2.Information exchange practices and 3.Quality improvement strategies (Table 4).

Following separate analysis of patient and HCP data, the results of both participant groups were compared to assess similarities and differences between their reports of knowledge, attitudes and barriers to handover communication. The results of this comparison are displayed in Figure 1 (see supplementary file "S5").The similarities will be described first, followed by the differences. To ensure confidentiality, numerical pseudonyms have been used when presenting quotes.

Table 3. Summary of charted data for inpatients (IPs)

IP	Public healthcare service characteristics		HCP to patient communication			Attitudes regarding medical information		
	Large patient loads (overcrowding)	Deficient primary care services	Verbal healthcare information (during admission)	Referral information	Impoliteness/ impatience	Transportation of medical documents	Patient-held booklet intervention	Dissatisfaction with lifestyle advice
1						✓		
2			✓					
3	✓		✓		✓	✓		
4			✓			✓		
5		✓	✓	✓	✓			
6				✓		✓		
7	✓	✓		✓		✓		
8				✓				
9			✓					
10			✓					
11	✓		✓			✓		
12			✓	✓		✓		
13			✓			✓		
14		✓	✓				✓	✓
15		✓	✓		✓		✓	✓
16		✓	✓			✓	✓	
17			✓			✓	✓	✓
18		✓	✓			✓	✓	
19			✓			✓	✓	
20			✓				✓	✓

Table 4. Summary of charted data for healthcare professionals (HCPs)

HCP	System factors			Information exchange practices				Quality improvement strategies				
	Time & resource constraints	Absence of handover communication training	Absence of structured formats for information exchange between HCPs	Hospital record keeping	Ad-hoc phone calls	Patient-held medical documents	Discharge instructions	Hierarchical transfer of responsibility	Increase resource provision	Introduce formal referral systems	Implement "e-health" systems	Patient-held booklet intervention
1			✓			✓	✓		✓			
2			✓			✓	✓					
3						✓			✓	✓	✓	
4	✓		✓			✓	✓					
5			✓	✓		✓						
6	✓		✓						✓		✓	
7	✓		✓		✓							
8	✓				✓							
9									✓			
11	✓	✓	✓		✓		✓					
14	✓	✓	✓						✓	✓		
15				✓		✓			✓		✓	
18	✓										✓	✓
19	✓											✓
20	✓					✓						✓
21												✓
22	✓							✓				✓
23				✓		✓	✓	✓				
24	✓			✓								
25				✓								
26	✓							✓				

3.4 Overlapping content

3.4.1 Public healthcare constraints

During interviews, a number of patients reported that they chose to visit public hospitals because of the better availability of healthcare staff compared to local healthcare facilities, such as smaller hospitals and primary/community health centres:

"We have very limited time, we did go to local hospital but doctors are not there. So if we get time we will come here rather than going to a hospital where there are no doctors. (IP 15)"

However, multiple patients also reported that government hospitals were often crowded with high daily patient loads:

"There is so much crowd there you can't ask or hear anything there... so many people are there now, you cannot do anything. (IP 11)"

The human resource issues at government primary and community healthcare facilities were also mentioned by HCPs:

"It will be useful if availability of doctors is ensured at the peripheral institutions around the clock. At times it is not there. (DOC 1)"

Additionally, in our study settings most hospital doctors worked in both outpatient clinics and inpatient wards on a daily basis. Many doctors expressed concerns of time pressures due to the large patient volumes seen at hospital outpatient clinics and the subsequent lack of time they had to attend to all patients:

1
2
3 378 *“We can hardly spend five minutes with each patient, seeing the crowd you will*
4
5 379 *just want to finish everyone soon. (DOC 7)”*
6
7

8 380 Some doctors also reported that human and medical resource constraints across
9
10 381 public healthcare facilities were hindering quality of care:

11
12
13 382 *“[It’s] not [about] motivation, [it’s about] resource limitation. It’s not humanly*
14
15 383 *possible to see people every day for seven days. Quality definitely gets*
16
17 384 *compromised. (DOC 3)”*
18
19

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21 385
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23

24 386 **3.4.2 Referral communication**

25
26
27 387 A number of patients who recalled being referred from a previous healthcare facility
28
29 388 to the hospital reported that they were not provided with any referral information:

30
31
32 389 *“No, they didn’t give any parchi [papers]. We were getting medicines right only*
33
34 390 *that is with us. (IP 8)”*
35
36

37
38 391 HCPs also discussed referral communication. Doctors explained that there were no
39
40 392 structured processes to follow for information exchange during referrals:

41
42
43 393 *“Yeah there is no proper way of doing it... inpatients sometimes we have to*
44
45 394 *[refer] but as I told you we never had a structured format. (DOC 14)”*
46
47

48
49 395 However, despite a lack of structured systems, some doctors described making ad-
50
51 396 hoc calls to ensure that some information was transferred when referring a patient:

52
53
54 397 *“Sometimes I call the doctor to tell them that so and so is coming. Please do*
55
56 398 *the needful. If I know the patient or doctor. (DOC 11)”*
57
58

59 399
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3.4.3 Patient-held medical information

At the point of hospital admission, patient-held notes and/or medical records can facilitate optimal care by providing HCPs with key patient-specific information. When asked about whether they brought medical papers to the hospital, most patients reported that they regularly stored and transported papers to HCP visits; these included referral notes, prescription cards, test results and other records from inpatient/outpatient/primary care:

“Yeah we have always kept everything safely. [Shows researcher a bag with all sort of papers like reports, lab tests, etc.] (IP 3)”

Doctors also talked about patient-held medical information during interviews. For example, some doctors reported that patients regularly kept and transported their medical records:

“Almost everyone comes with medical reports. (DOC 11)”

However, other doctors described that, in their experience, the availability of patient-held records was less consistent and that this could negatively impact continuity of care:

“Some of them do bring investigations and all others don’t bring much and we have to work out what happened from the start. (DOC 3)”

3.4.4 Healthcare management communication

When asked about verbal HCP communication, many patients reported that during admission and/or discharge a HCP had provided them with some basic verbal

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2
3 422 healthcare management information (i.e. medication, treatment, lifestyle and/or
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5 423 follow-up requirements). However, the quantity of information received appeared to
6
7 424 vary notably between patients. For example, some recalled being given detailed
8
9 425 instructions:

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12
13 426 *“Doctor says everything. I was given medicines and now they asked me to*
14
15 427 *take injections also. Doctor is saying I am not controlling my sugar. The nurse*
16
17 428 *taught me how to take injection. (IP 19)”*

19
20 429 Conversely, others appeared to receive relatively limited information and one carer
21
22 430 reported having to seek healthcare advice from alternative sources:

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24
25
26 431 *“Doctors don’t explain everything. We speak to our friends and get details*
27
28 432 *from them. (Carer - IP 16)”*

29
30 433 HCPs also discussed their healthcare communication practices with inpatients.

31
32 434 Whilst talking about discharge, a nurse described the usual amount of time taken to
33
34 435 explain information to each patient:

35
36
37
38 436 *“Usually we take 20-25 minutes to instruct the patients. If the patients*
39
40 437 *understand then it can be even faster. (NUR 1)”*

41
42
43
44 438 Doctors reported that they provided patients with documented information on
45
46 439 discharge cards and verbally advised inpatients to return to their local
47
48 440 HCP/healthcare institution during the discharge consultation:

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50
51 441 *“We give them a discharge card. Discharge card is there we have written and*
52
53 442 *then we refer them to the local hospital or where they come from. (DOC 15)”*

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57 443

3.4.5 Booklet intervention

During interviews that took place after the handover expert meeting, patients were asked for their opinion regarding the utility of a patient-held booklet where records could be stored and transported to HCP visits. Most appeared to think that it might be effective and could help with self-management, including those who were illiterate:

"Yeah, sometimes we don't know what to do so it would be good if some paper is there to help us. We can't read it ourselves but our son or daughter-in-law can help us. (IP 17)"

HCPs were also asked for their opinions regarding the booklet intervention. Many generally felt it could be useful, but various conditions and/or reservations were also expressed. For example, doctors felt that the success of the booklet would rely on patient attitudes:

"That will depend on the patients, if they maintain that and bring it every time. For us there is no change, we write our observations in paper or notebook, doesn't matter... Might be helpful. (DOC 22)"

Related to this, one doctor felt that to see the most benefit, patients needed to be regularly instructed to keep and transport their medical documents:

"We write the communication but the patients don't keep them proper. I think we have to tell the patients to keep the letters and papers. (DOC 4)"

3.5 Content unique to patients

3.5.1 Attitudes regarding HCP communication during admission

A few patients recalled receiving some unfavourable/impolite treatment from healthcare staff during their hospital admission:

“The doctor’s don’t speak much. They explain but get angry if you don’t understand them. (IP 3)”

In addition, some patients expressed dissatisfaction with the lifestyle advice provided. In particular, patients of lower socio-economic status felt that nutritional instructions were not suitable for them due to their time and financial constraints:

“We are daily labourers we can’t follow all the instructions... We can’t follow that, we are poor we do hard work and we just can’t concentrate on eating. Whatever is there we just eat. (IP 15)”

3.6 Content unique to HCPs

3.6.1 Institutional/systemic factors

Some doctors displayed good knowledge of the key information should be transferred during patient referrals/transfers and/or hospital discharge.

“To another hospital, yeah first we have to write what are the main complaints of patients presenting illness and write about the past history, then we will write about what all investigations we have done here ‘til the day of transfer, then what is the condition of the patient we are discharging, why we are

1
2
3 487 *discharging (and) any investigations, major investigations, to be done. (DOC*
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5 488 *2)”*
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8
9 489 However, when asked about training opportunities numerous doctors mentioned that
10
11 490 they had not received any formal handover training. Some recalled that this type of
12
13 491 training was not provided at medical school:

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15
16 492 *“I think it was not there in medical curriculum. (IP 1)”*
17

18
19 493 Others reported that training was not provided in their workplace/s and instead they
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21 494 learned on the job:

22
23
24 495 *“We are sent to the wards, we see what our seniors do and we do that’s all.*

25
26 496 *We have to develop our communication skills ourselves no formal training is*
27
28
29 497 *there. (DOC 14)”*
30

31
32 498 When asked about hospital record keeping, a medical records officer stated that
33
34 499 inpatient records are stored in hospitals following patient discharge for up to ten
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36 500 years. However, the same officer also indicated that these paper-based records are
37
38 501 not easily accessible:

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40
41 502 *“Definitely I can locate any record but it might take some time to locate them.*
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43
44 503 *(MRO 1)”*
45

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47 504

50 505 **3.6.2 Organisational culture**

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52
53 506 Based on reports from both doctors and nurses, it appeared as though some
54
55 507 hierarchical transfer of responsibility for documented handover communication took
56
57 508 place in hospitals. For example, a senior doctor mentioned that they instructed
58
59 509 medical interns to write notes for them when their patient load was high:
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1
2
3 510 *"We do write in the papers, whether it's discharge card or outpatient sheets.*
4
5 511 *When patient load is high, then we tell our interns to do it for us, we check that*
6
7
8 512 *and then sign. (DOC 22)"*
9

10
11 513

14 514 **3.6.3 Requirements for improving information exchange**

17 515 During interviews, HCPs were asked for their thoughts on requirements to improve
18
19 516 information exchange between HCPs and between HCPs and patients. Numerous
20
21
22 517 doctors felt that there needed to be a notable increase in public healthcare resource
23
24 518 provision:

27 519 *"Infrastructure is very small but the outpatient department is ten times more*
28
29 520 *than it can manage, so more posts should be created... We have to increase*
30
31 521 *the manpower and also our materials. (DOC 15)"*
32

34 522 In addition, doctors discussed the idea of introducing structured referral documents
35
36 523 and systems to improve referral communication:

39 524 *"You can supply people with [referral] forms and make it mandatory that*
40
41
42 525 *residents have to maintain a register. In that case they will maintain the*
43
44 526 *register. (DOC 3)"*
45

47 527 Whilst discussing current information systems one doctor in Kerala reported that an
48
49 528 application had been made for a near-future transition to computerised healthcare
50
51
52 529 information systems. This appeared to be a state-wide plan for public healthcare
53
54 530 facilities:

57 531 *"We have submitted a proposal for paperless computerisation system for*
58
59 532 *doctors, so I think state-wide they are planning to do that. (DOC 6)"*
60

4. DISCUSSION

4.1 Main findings

This study presents qualitative data on patient and HCP knowledge, attitudes and barriers to handover and healthcare communication during public hospital inpatient care in Kerala and Himachal Pradesh states, India. The main findings are that verbal and documented information exchange between HCPs and between HCPs and patients is often suboptimal during referrals/transfers, hospital admission and discharge, with a lack of structured systems and HCP education in place to ensure sufficient continuity of care. Whilst unique themes emerged for both patients and HCPs, comparison of the results showed that there was also a notable amount of overlapping content. The results have highlighted the multifaceted nature of handover and healthcare communication during inpatient care in India. With regard to public health, the findings have also elucidated a number of key areas to address to improve the continuity and safety of chronic NCD patient care.

Some of the results from the current study reflect and reinforce findings from previous research focussing on outpatient care in the same study areas of India.³³ In particular, during interviews in both studies, patients and HCPs recognised the resource constraints affecting public healthcare. The main issue reported was deficient primary healthcare services, which is in line with well-established findings of limited primary care infrastructure across India and numerous LMICs.³⁴ In our study settings, under-resourced primary care resulted in many patients preferring to visit hospitals as the first point of care. Subsequently, large patient loads were seen in both outpatient and inpatient departments, which limited HCP consultation times. Other key areas of discussion in the currently study reflected in the outpatient

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2
3 557 findings were inconsistent transportation of patient-held medical documents and
4
5 558 views regarding the utility of patient-held record booklets. Whilst more inpatients than
6
7 559 outpatients reported that they regularly transported records to HCP visits, doctors
8
9 560 recalled seeing many who did not bring information to hospital. This was problematic
10
11 561 as if patients did not bring their records then doctors had to gather details from
12
13 562 scratch, potentially compromising continuity of care. When asked about the possible
14
15 563 utility of introducing patient-held record booklets to store and transport documents,
16
17 564 inpatients had similar views to outpatients which were generally positive, but also felt
18
19 565 that the inclusion of self-management information would be beneficial. Doctors in the
20
21 566 current study expressed a wider variety of views, but broadly thought that booklets
22
23 567 could be useful if patients had positive attitudes towards their maintenance and use.
24
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29 568 Regarding referral communication, the current study also highlighted similar
30
31 569 issues of deficient information exchange observed in the previous outpatient study.³³
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33 570 For example, reports from HCPs and inpatients revealed that that documented
34
35 571 information was often provided in the form of minimal, hand-written notes on papers
36
37 572 provided for other purposes (e.g. prescription cards). These findings reflect results
38
39 573 from other LMIC studies that have evidenced the exchange of poor-quality referral
40
41 574 documents.³⁵⁻³⁷ However, the current study also evidenced inpatient reports of not
42
43 575 being provided with any documented information during referrals. Further, whilst a
44
45 576 small number of inpatient HCPs in the current study explained that they called HCPs
46
47 577 to discuss a referral case, it was revealed that this was dependent on how well they
48
49 578 knew the patient and/or HCP. Such findings indicate that there are further
50
51 579 inconsistencies in referral communication practices than previously described.
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53 580 Overall, such deficits are unsurprising given that multiple HCPs in both the current
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55 581 and previous outpatient study reported an absence of structured systems and
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2
3 582 education provided for handover communication. These findings are also in line with
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5 583 the few previous descriptions from India of an absence of training and protocols for
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7
8 584 handover practices.¹⁴⁻¹⁶
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10 585 In addition to similarities found with previous research, the current study has
11
12 586 elucidated numerous novel insights regarding handover and healthcare
13
14 587 communication during critical points in inpatient care, which were previously
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16
17 588 unexplored in the study areas of India. Regarding inpatient medical record keeping,
18
19 589 a records officer reported that hospital records were not easily accessible and rarely
20
21 590 retrieved. This lack of available and accurate medical information, paired with
22
23
24 591 inconsistent transportation of patient-held records, carries notable risks for patient
25
26 592 safety. This is because without key patient background and/or treatment details,
27
28 593 critical oversights can be made that result in adverse events.^{4 5 7} Additionally, there
29
30
31 594 were notable variations in patient reports of the provision of healthcare management
32
33 595 information during hospital admission and discharge; whilst some patients reported
34
35 596 being given clear self-care instructions, others stated that they sought information
36
37 597 from external sources due to the lack of detail provided by hospital HCPs. It appears
38
39
40 598 that the time pressures experienced by HCPs and were a significant contributory
41
42 599 factor to inconsistencies in HCP to patient communication, particularly at the point of
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45 600 discharge. During interviews, senior doctors reported often being so busy with high
46
47 601 patient loads that they would pass the duty of writing discharge notes to interns or
48
49 602 nurses. Additionally, it seemed that more time was spent on verbal discharge
50
51 603 communication, with a nurse reporting that they typically took approximately twenty
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53
54 604 minutes per patient to explain discharge instructions. Such practices may be
55
56 605 compromising the retention of key healthcare information, as global literature
57
58 606 suggests that patients can struggle to absorb verbal details provided during
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3 607 consultations.³⁸ The potential implications of these findings are significant, given
4
5 608 the associations that have been found between deficient discharge communication
6
7
8 609 and an increased likelihood of adverse events.⁷⁻¹⁰
9

10 610 Other key issues affecting handover and healthcare communication during
11
12 611 admission and discharge were mentioned solely by each participant group. For
13
14 612 patients, some recalled receiving impolite treatment from hospital doctors during
15
16
17 613 admission. Additionally, a small number of patients were dissatisfied with the take-
18
19 614 home nutritional advice provided, as they felt it failed to take into account their socio-
20
21 615 economic deprivation. These results may be explained by the reported lack of
22
23 616 communication training in medical education, as well as a historic tendency for
24
25
26 617 paternalistic physician conduct in India.³⁹ In other areas of India and Asia, research
27
28 618 on HCP-patient communication has also evidenced asymmetric power balances and
29
30 619 patient dissatisfaction during patient consultations.⁴⁰ Such findings reveal the need
31
32
33 620 for more patient-centred communication, particularly for poorer patients that make up
34
35 621 a significant proportion of public healthcare users. As for HCPs, during interviews
36
37 622 many doctors recognised the need for an increase in public healthcare resource
38
39 623 provision, as well as structured systems for information exchange. Some also
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41
42 624 discussed the promise of implementing “e-health” systems, with a doctor in Kerala
43
44 625 reporting that public healthcare facilities across the state will be transitioning to
45
46 626 computerised systems. Whilst our colleagues from Kerala report that this
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49 627 development is in its early stages, it holds potential as similar systems have
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51 628 advanced the accessibility and quality of healthcare information across the globe.^{41 42}
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4.2 Strengths and limitations

As far as the authors are aware, this is the first study to qualitatively explore factors affecting multiple areas of handover communication for chronic disease inpatients in India. The use of multiple sites and qualitative methodology has revealed a number of key issues that are supported among the HIC and emerging LMIC literature, suggesting likely transferability to other LMIC settings. Additionally, interviews with both patients and HCPs have provided multiple key perspectives regarding critical areas of handover communication for inpatient care. The number of interviews conducted helped to ensure data saturation for both participant groups and study credibility was strengthened via use of multi-analyst triangulation.³¹

The lack of documented inclusion/exclusion rates for participation is a study limitation, as this could not be recorded. In addition, the accuracy of recall of the minority of patients interviewed at home may have been limited by the delay between recruitment and data collection. Recruitment challenges meant that patient participants were predominantly older (i.e. 45yrs+), which limited exploration of younger patient experience; this was, however, largely unsurprising given the study exclusively recruited inpatients with chronic NCDs. The cross-cultural nature of this research may have also resulted in constraints during data collection and analysis, as in-group bias could have affected participants' willingness to openly converse with a non-local researcher.⁴³ Social desirability bias from the use of individual interviews and participant's awareness that the interviewer was a public health professional may have also affected truthfulness of the data.⁴⁴ Despite these challenges, the recurrence of themes indicating data saturation and the finding that our results are supported by existing literature suggests that they had minimal impact.

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657 **4.3 Conclusions and next steps**

658 This study has found that handover communication for chronic NCD inpatients
659 during referrals/transfers, hospital admission and discharge is often fragmented. The
660 critical barriers appear to be an absence of structured information exchange systems
661 and HCP education. There is also a growing recognition of the need for the
662 government to strengthen primary healthcare infrastructure in line with the
663 declaration of Alma Alta.⁴⁵ This will greatly assist in increasing accessibility of care
664 and subsequently reducing pressure on hospital services. It will also be required to
665 address the United Nations sustainable development goals regarding universal
666 health coverage and reducing premature deaths from NCDs.⁴⁶ In addition, the
667 implementation of structured documentation, systems and training is urgently
668 required to manage critical care transitions such as referral and discharge. Research
669 from both HIC and LMIC settings has proven that such interventions can improve
670 continuity and safety of care.^{4 16 35 47} Regarding future steps, during HCP interview it
671 was reported that public healthcare facilities in Kerala will be transitioning to
672 computerised “e-health” information systems the Indian government has since
673 pledged to digitise all public healthcare information systems via an “Integrated Health
674 Information Platform”.⁴⁸ Whilst such developments hold promise and are making
675 progress in Kerala, they remain in their initial stages in many states and face
676 numerous technological challenges. Additionally, they are not likely to target issues
677 regarding HCP to patient communication, patient access to healthcare information
678 and information exchange between public and private providers.

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3 679 Therefore, a mixed-methods pilot study exploring the design and
4
5 680 implementation of patient-held record booklets is suggested. This could ameliorate
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7 681 some of the current issues by incorporating disease-specific and structured
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9 682 documents, which have been shown to improve recording of clinical information,^{47 49}
10
11 683 ⁵⁰ and providing a means of organising records in a logical and accessible way. The
12
13 684 patient-held nature of this strategy would increase patient access to key healthcare
14
15 685 information, which may improve self-management. Given the unstructured,
16
17 686 predominantly paper-based systems utilised across the study sites, this is an area
18
19 687 for development that has been welcomed by Indian national and international
20
21 688 experts, as well as patients and HCPs in our study areas. There have also been
22
23 689 multiple international successes of improved continuity of care via utilisation of
24
25 690 similar patient-held/home-based records in outpatient care and maternal and child
26
27 691 health.^{23-27 51} In order to maximise booklet utilisation, it would be necessary to
28
29 692 address the issues surrounding patient retention and understanding of the
30
31 693 importance of medical documents. Initial key steps could be to involve both patients
32
33 694 and HCPs in the design process and accompany the introduction of booklets with
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35 695 relevant promotion, training and incentives.
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43 696 Finally, given the rising burden of NCDs across LMICs, this research is timely
44
45 697 and crucial for effective health systems development. It is important that further LMIC
46
47 698 research is conducted to explore critical factors affecting quality, continuity and
48
49 699 safety of care and to develop sustainable and cost-effective interventions.
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713

714

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716 In order of the authors list: CH: Data curation, formal analysis, visualisation,
717 writing (both original draft and final review and editing). SJ: Investigation, data
718 curation, project administration, writing (review and editing). JP: Conceptualisation,
719 funding acquisition, project administration, supervision, writing (review and editing).
720 SS: Funding acquisition, project administration, supervision, writing (review and
721 editing). SG(oenka): Funding acquisition, projection administration, supervision,
722 writing (review and editing). PD: Conceptualisation, funding acquisition, project
723 administration, supervision, writing (review and editing). PG: Conceptualisation, data
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725 acquisition, formal analysis, writing (review an editing). RL: Conceptualisation,

1
2
3 726 funding acquisition, writing (review and editing). SMH: Conceptualisation, funding
4
5 727 acquisition, investigation, methodology, project administration, supervision, writing
6
7
8 728 (review and editing).
9

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11 730

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27
28 735 no role in study design, conduct or reporting.
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31 737

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39
40 739 The authors of this manuscript have no competing interests to disclose.
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45 46 47 48 49 50 51 52 742 **ETHICS APPROVAL**

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54
55
56 743 This study was reviewed and approved by the Centre for Chronic Disease
57
58 744 Control Independent Ethics Committee, India, and the Amrita Institute of Medical
59
60

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2
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4
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14 749 **DATA SHARING STATEMENT**

17
18 750 Deidentified participant transcript data generated and analysed during the
19
20
21 751 current study are available from the corresponding author on reasonable request.
22
23

24 752 Contact Details: Dr. Semira Manaseki-Holland, s.manasekiholland@bham.ac.uk.
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S1. Additional information regarding the Indian healthcare system

1. National context: structure of public healthcare system

The basic structure of the public healthcare system in India is as follows:¹

- National level: Ministry of Health and Family Welfare.
- State level: State Department of Health and Family welfare in each state.
- Regional level: covers 3 - 5 districts. Headed by State Directorate of Health.
- District level: Middle level management organisation serving as a link between the regional and state structures and the peripheral and PHC structures.
- Sub-divisional/Taluk level: Hospitals/hospitals with specialty care (Taluk headquarters hospitals). Healthcare services are rendered via the office of Assistant District Health and Family Welfare Officer.
- Community level: CHCs that cater for 80,000-120,000 population and PHCs that cover approximately 20,000 – 30,000 population (often upgrades of rural dispensaries).

2. Public healthcare across India

The quality of public healthcare across India varies notably between states and between urban and rural areas. Aside from some pockets of excellence in a select few states, the public sector is generally falling short of meeting the basic healthcare needs of the growing population. Some of the main reasons for this include: services being too far away, a lack of trained personnel and supplies, and limited facility

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3 opening times that are often unreliable.² With regard to primary health centres,
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5 government estimates indicate that 10% are without a doctor, 37% are without a
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7 laboratory technician and 25% are without a pharmacist.³ Issues with public health
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9 centres are particularly rife within poor communities, where facilities have been
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11 found to be closed more than half the time and lack basic medical supplies. Public
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13 facilities are the often the only source of qualified healthcare professionals in rural
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15 areas, which is where much of the poor live.²
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23 **3. National context: private healthcare**

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25 Public healthcare in India has lacked funding over a series of decades, resulting from
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27 a lack of prioritisation from economic planners. Therefore, the increasing prevalence
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29 of chronic, non-communicable diseases alongside unresolved challenges of
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31 infectious diseases has placed more strain on public health systems than what can
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33 feasibly be managed. The private healthcare sector has subsequently proliferated to
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35 meet rising needs, expectations and incomes and surveys indicate that private
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37 healthcare providers now dominate service provision. According to reports, public
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39 facilities provided just 20% of primary and community-level healthcare services, and
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41 40% of hospital visits in 2004-05 (down from 25% and 60% respectively in 1986-
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43 87).² At the higher end of the market the private sector has world class facilities that
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45 have grown substantially. As a result, hospital care is now an export sector for
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47 medical tourism that cares for approximately 200,000 foreign patients per year.⁴
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49 However, private healthcare providers are poorly regulated, with uneven quality
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51 across facilities. This is resulting in a large number of private facilities delivering
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53 services without appropriate equipment or expertise. Additionally, although visiting
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55 private providers is preferential for many, it is common for high out-of-pocket costs
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3 to be incurred; more than 40% of all private hospital inpatients have to borrow money
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5 or sell assets in order to fund their care.⁵ This means that many poorer patients are
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7 unable to access healthcare while others fall into poverty as a result of spending.
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S2. S1. Additional information regarding the study settings

2.1.1. Study setting - Himachal Pradesh

Himachal Pradesh is principally a rural state in northern India. It has a population of 6.86 million people and the average literacy rate is 83.3%, which is higher than the national average (74%). However, rates remain notably lower for women compared to men (76.6% vs. 90.8%, respectively).⁶ Private HCPs are less prevalent in Himachal Pradesh and public healthcare utilisation remains relatively high.⁷ A recent study found that the availability of public health services in the state was deemed adequate as compared to standards of other hill states, but with an unequal distribution of resources across regions.⁸

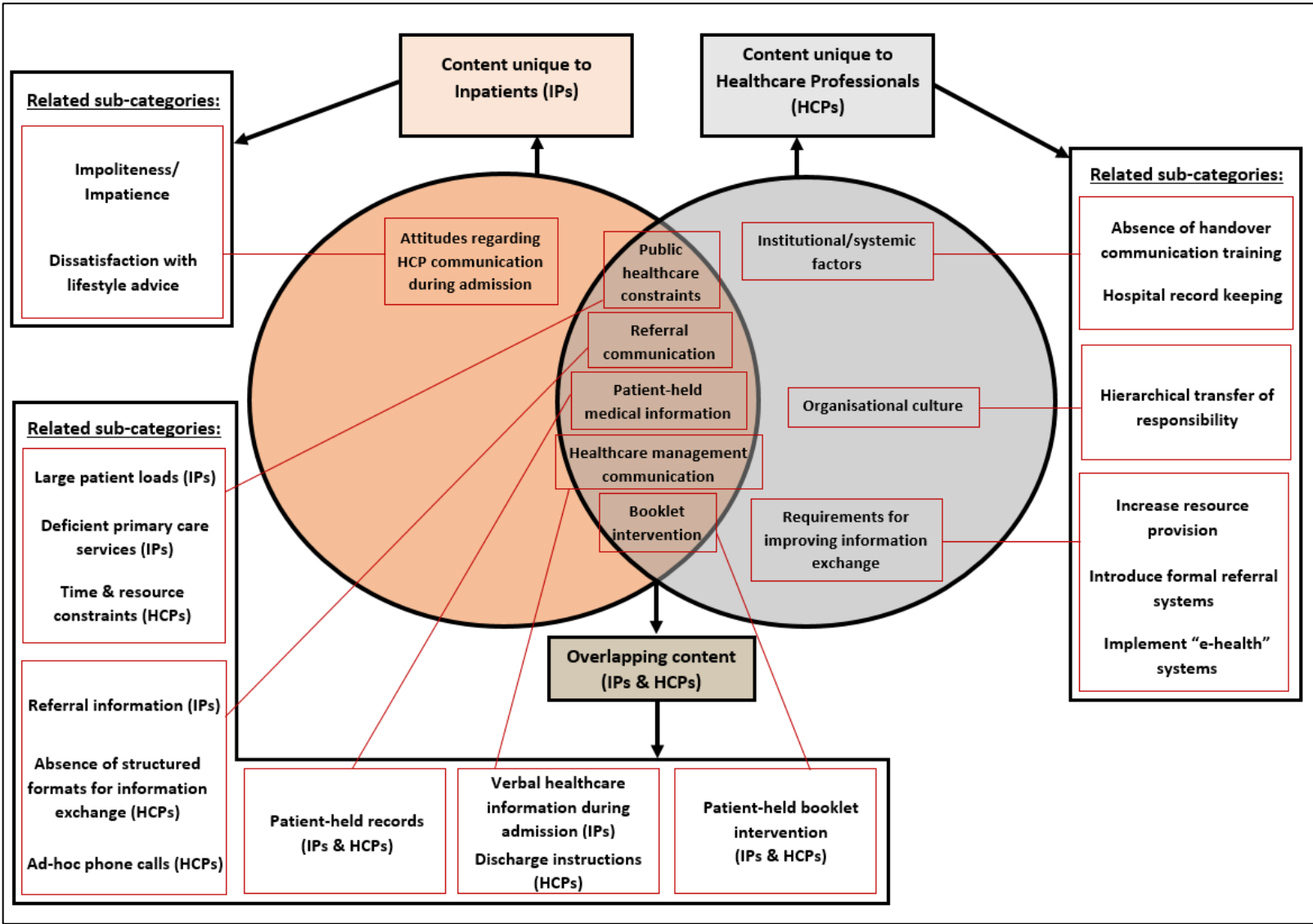
2.1.2 Study setting - Kerala

Kerala state is in the south-west of India. It has a population of 34.8 million people and a greater than national average urban-based population of 47.7%. It has the highest overall literacy rate in India (93.9%; men 96.1%, women 92.1).⁹ There are a relatively large number of government healthcare facilities in Kerala but the healthcare environment is becoming increasingly complex due to a growing presence of private healthcare providers. Despite this, public health facilities in Kerala are generally the first point of care and continue to deliver essential services.¹⁰

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S5. Figure 1. Similarities and differences between the content of IP & HCP data with related sub-categories



Reporting checklist for qualitative study.

Based on the SRQR guidelines.

Instructions to authors

Complete this checklist by entering the page numbers from your manuscript where readers will find each of the items listed below.

Your article may not currently address all the items on the checklist. Please modify your text to include the missing information. If you are certain that an item does not apply, please write "n/a" and provide a short explanation.

Upload your completed checklist as an extra file when you submit to a journal.

In your methods section, say that you used the SRQR reporting guidelines, and cite them as:

O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. Standards for reporting qualitative research: a synthesis of recommendations. Acad Med. 2014;89(9):1245-1251.

	Reporting Item	Page Number
#1	Concise description of the nature and topic of the study identifying the study as qualitative or indicating the approach (e.g. ethnography, grounded theory) or data collection methods (e.g. interview, focus group) is recommended	1
#2	Summary of the key elements of the study using the abstract format of the intended publication; typically	2-3

1			includes background, purpose, methods, results and	
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3			conclusions	
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6	Problem formulation	#3	Description and significance of the problem /	5-7
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8			phenomenon studied: review of relevant theory and	
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10			empirical work; problem statement	
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13	Purpose or research	#4	Purpose of the study and specific objectives or	6-7
14	question		questions	
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19	Qualitative approach	#5	Qualitative approach (e.g. ethnography, grounded	6-12
20	and research paradigm		theory, case study, phenomenology, narrative research)	
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23			research paradigm (e.g. postpositivist, constructivist /	
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25			interpretivist) is also recommended; rationale. The	
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27			rationale should briefly discuss the justification for	
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29			choosing that theory, approach, method or technique	
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31			rather than other options available; the assumptions	
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33			and limitations implicit in those choices and how those	
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35			choices influence study conclusions and transferability.	
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39			discussed together.	
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47	Researcher	#6	Researchers' characteristics that may influence the	6-12
48	characteristics and		research, including personal attributes, qualifications /	
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51			and / or presuppositions; potential or actual interaction	
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1		questions, approach, methods, results and / or	
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6	Context	#7 Setting / site and salient contextual factors; rationale	7
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9	Sampling strategy	#8 How and why research participants, documents, or	7
10		events were selected; criteria for deciding when no	
11		further sampling was necessary (e.g. sampling	
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19	Ethical issues pertaining	#9 Documentation of approval by an appropriate ethics	37
20	to human subjects	review board and participant consent, or explanation for	
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29	Data collection methods	#10 Types of data collected; details of data collection	6-12
30		procedures including (as appropriate) start and stop	
31		dates of data collection and analysis, iterative process,	
32		triangulation of sources / methods, and modification of	
33		procedures in response to evolving study findings;	
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43	Data collection	#11 Description of instruments (e.g. interview guides,	6-12
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53	Units of study	#12 Number and relevant characteristics of participants,	14-17
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55		participation (could be reported in results)	
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1 2 3 4 5 6 7 8 9 10 11 12	Data processing	#13	Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymisation / deidentification of excerpts	12-13
13 14 15 16 17 18 19 20 21 22	Data analysis	#14	Process by which inferences, themes, etc. were identified and developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale	12-13
23 24 25 26 27 28 29 30	Techniques to enhance trustworthiness	#15	Techniques to enhance trustworthiness and credibility of data analysis (e.g. member checking, audit trail, triangulation); rationale	12-13
31 32 33 34 35 36 37	Syntheses and interpretation	#16	Main findings (e.g. interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	14-28
38 39 40 41 42 43	Links to empirical data	#17	Evidence (e.g. quotes, field notes, text excerpts, photographs) to substantiate analytic findings	21-28
44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60	Intergration with prior work, implications, transferability and contribution(s) to the field	#18	Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application / generalizability; identification of unique contributions(s) to scholarship in a discipline or field	29-32

1	Limitations	#19	Trustworthiness and limitations of findings	33
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4	Conflicts of interest	#20	Potential sources of influence of perceived influence on	37
5			study conduct and conclusions; how these were	
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12	Funding	#21	Sources of funding and other support; role of funders in	37
13			data collection, interpretation and reporting	
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18 American Medical Colleges. This checklist was completed on 26. November 2018 using
19 <http://www.goodreports.org/>, a tool made by the [EQUATOR Network](#) in collaboration with [Penelope.ai](#)
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BMJ Open

Patient and healthcare provider knowledge, attitudes and barriers to handover and healthcare communication during chronic disease inpatient care in India: A qualitative exploratory study

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2018-028199.R2
Article Type:	Original research
Date Submitted by the Author:	17-Oct-2019
Complete List of Authors:	Humphries, Claire; University of Birmingham, UK, Institute of Applied Health Research Jaganathan, Suganthi ; Centre for Chronic Disease Control Panniyammakal, Jeemon ; Centre for Chronic Disease Control Singh, Sanjeev; Amrita Institute of Medical Sciences and Research Centre; Amrita Institute of Medical Sciences and Research Centre Goenka, Shifalika; Public Health Foundation of India Dorairaj, Prabhakaran ; Centre for Chronic Disease Control Gill, Paramjit ; University of Warwick Greenfield, Sheila; University of Birmingham, Primary Care Clinical Sciences Lilford, Richard; University of Warwick, Division of Health and Population Sciences Manaseki-Holland, Semira; University of Birmingham,
Primary Subject Heading:	Public health
Secondary Subject Heading:	Health services research, Qualitative research
Keywords:	International health services < HEALTH SERVICES ADMINISTRATION & MANAGEMENT, Quality in health care < HEALTH SERVICES ADMINISTRATION & MANAGEMENT, PUBLIC HEALTH, QUALITATIVE RESEARCH

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Manuscripts

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4 1 **Patient and healthcare provider knowledge,**
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27 **ABSTRACT**

28 **Objectives** To investigate patient and healthcare provider (HCP) knowledge,
29 attitudes and barriers to handover and healthcare communication during inpatient
30 care and explore interventions for improving the storage and transfer of healthcare
31 information.

32 **Methods** *Design:* Qualitative study comprising 41 semi-structured, individual
33 interviews. Thematic analysis using the Framework Method with analyst
34 triangulation. *Setting:* Three public hospitals in Himachal Pradesh and Kerala, India.
35 *Participants:* 20 male (n=10) and female (n=10) chronic non-communicable disease
36 (NCD) patients and 21 male (n=15) and female (n=6) HCPs. Purposive sampling
37 was used to identify patients with chronic NCDs (Cardiovascular Disease, Chronic
38 Respiratory Disease, Diabetes or Hypertension) and HCPs.

39 **Results** Patient themes: (1) *Public healthcare service characteristics*; (2) *HCP-*
40 *patient communication*; (3) *Attitudes regarding medical information*. HCP themes: (1)
41 *System factors*; (2) *Information exchange practices*; (3) *Quality improvement*
42 *strategies*. Both patients and HCPs recognised public healthcare constraints that
43 increased pressure on hospitals and subsequently limited consultation times.
44 Systemic issues reported by HCPs were a lack of formal handover systems, training
45 and accessible hospital-based records. Healthcare management communication
46 during admission was inconsistent and lacked patient-centeredness, evidenced by
47 varying patient of information received and some dissatisfaction with lifestyle advice.
48 Senior doctors reported passing the duty of writing discharge notes to juniors when
49 busy with high patient loads. Nurses reported predominantly providing verbal
50 discharge instructions to patients. Patient-held documents facilitated information

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3 51 exchange between HCPs but were not always transported. HCPs and patients
4
5 52 expressed positive views towards the idea of introducing patient-held booklets to
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8 53 improve the organisation and transfer of medical documents.
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10 54 **Conclusions** Handover and healthcare communication during chronic NCD inpatient
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12 55 care are currently suboptimal. Structured information exchange systems and HCP
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14 56 training are required to improve continuity and safety of care during critical
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17 57 transitions such as referral and discharge. Our findings suggest that patient-held
18
19 58 booklets may also assist in enhancing handover and patient-centred practices.
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STRENGTHS AND LIMITATIONS OF THIS STUDY

- This is the first qualitative study, as far as the authors are aware, to explore both patient and healthcare provider knowledge, attitudes and barriers to multiple areas of handover and healthcare communication for chronic disease inpatients in India.
- The number of interviews from both patients and healthcare providers facilitated data saturation and provided a range of significant perspectives.
- Analyst triangulation corroborated data analysis and strengthened the credibility of the study.
- The accuracy of recall of patients interviewed at home (i.e. following hospital discharge) may have been limited by the delay between study recruitment and subsequent data collection.
- Awareness of the interviewer's context as a public health researcher may have resulted in participants distorting their responses to minimise critical judgement.

1. INTRODUCTION

The increasing burden of chronic, non-communicable diseases (NCDs) such as cardiovascular disease, diabetes and chronic respiratory disease has become a global pandemic that is disproportionately affecting low and middle-income countries (LMICs).¹ This is placing great demand on under-resourced health systems that can only be relieved by employing efficient and integrated approaches to healthcare management. Central to efficiency and integration in healthcare is effective handover communication, which involves the exchange of patient-specific information between healthcare providers (HCPs) and between HCPs and patients/carers.²

Between HCPs, information exchange is critical during clinical handovers, which are the points in care where information, responsibility and accountability for patient care are transferred from one HCP to another.³ Such exchange is vital because safe and effective treatment can only be maintained if all relevant information has been shared and understood.⁴ A wealth of research from high-income countries (HICs) has evidenced the association between communicative breakdowns during care transitions and risks to patient safety. These risks are pervasive throughout inpatient care and include delays in diagnosis, medication errors and life-threatening adverse events.^{5,6} In addition, one-in-five patients experience adverse events following hospital discharge and research has established a link between such events and deficient handover communication.⁷⁻¹⁰

Between HCPs and patients, effective information exchange is also vital as patients can provide valuable information to those involved at various stages of their care pathway.⁴ Excellent HCP-patient healthcare communication further empowers patients to become active participants in their healthcare management; this is a key

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3 131 aspect of patient-centred care, which has been linked to improved patient
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5 132 satisfaction and outcomes.¹¹
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8 133 Despite the established importance of handover communication for health
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10 134 systems functioning and patient safety in HICs, there has been a relative dearth of
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12 135 LMIC-based research focussing on this topic.¹² A recent (2019) study from South
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14 136 Africa has found inadequate discharge planning to be a significant contributor to
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16 137 avoidable causes of hospital readmission.¹³ Across India, a handful of predominantly
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18 138 single-site studies have evaluated and described deficiencies in information
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20 139 exchange during referrals, hospital shift-change and discharge.¹⁴⁻¹⁹ The current
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22 140 study forms part of a series completed for a project investigating handover and
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24 141 continuity of care for chronic NCD patients in Kerala and Himachal Pradesh states,
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26 142 India. The first study to have been disseminated focussed on outpatient care, which
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28 143 found issues such as suboptimal recording of information within patient-held medical
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30 144 documents and an absence of formal systems for exchanging information between
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32 145 levels of care.²⁰
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38 146 Given these emerging challenges and the established link between deficient
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40 147 handover communication during inpatient care and risks to patient safety, the current
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42 148 study was conducted to gain novel insight into the transfer of healthcare information
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44 149 during chronic NCD inpatient care across the same study areas of India. The primary
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46 150 objective was to explore knowledge, attitudes and barriers to handover and
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48 151 healthcare communication during the following points of inpatient care: 1)
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50 152 Referral/transfer (i.e. communication between HCPs and between HCPs and
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52 153 patients when referring and/or transferring patients) and 2) Hospital admission and
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54 154 discharge (i.e. communication between HCPs and patients regarding condition,
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56 155 treatment and/or management during hospital admission and discharge). A
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3 156 secondary objective was to explore possible interventions to improve the storage
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5 157 and transfer of key healthcare information.
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15 160 **2. METHODS**

18 161 **2.1 Overview**

22 162 We report findings from a qualitative study of handover communication for
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24 163 chronic NCD inpatients in two Indian states. This study was conducted from
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26 164 December 2014 to November 2015 across three public hospitals: one rural
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28 165 secondary-care hospital in Himachal Pradesh state, and one peri-urban secondary-
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30 166 care and one urban tertiary-care hospital in Kerala state. These settings were
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32 167 selected to capture a range of hospital types within different geographical settings.
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34 168 We selected public rather than private facilities as this is where a large proportion of
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36 169 socioeconomically vulnerable patients access healthcare. See supplementary files
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38 170 "S1" and "S2" for further information regarding the Indian healthcare system and
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40 171 study settings.
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48 173 **2.2 Participant recruitment**

52 174 **2.2.1 Patients**

55 175 Patients were recruited opportunistically from hospitals by trained research
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57 176 assistants (n=6).²¹ Purposive sampling was used to identify individuals who met the
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59 177 following inclusion criteria:²² adults (18 years+), admitted to hospital within 24 hours
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3 178 of a researcher first meeting them, due to complications from one of the following
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5 179 chronic NCDs: cardiovascular disease, chronic respiratory disease, diabetes
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7 180 mellitus, or hypertension. The identification process took place via researchers
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10 181 approaching ward nurses and asking them about patient demographics and
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12 182 admission details; patients were excluded if judged too unwell to participate by ward
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14 183 nurses. Patients who met the inclusion criteria were provided with verbal and
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16 184 documented study information. Written consent was obtained from literate patients.
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18 185 For illiterate patients, oral consent was obtained along with a thumbprint and
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20 186 signature from a literate witness (i.e. family member/carer) in line with World Health
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22 187 Organisation guidelines.²³ Patients were recruited until theoretical saturation was
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24 188 achieved;²⁴ A total of 20 patients participated.
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32 190 **2.2.2 Healthcare Professionals**

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35 191 Healthcare professionals (HCPs) were recruited from study hospitals by
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37 192 trained research assistants (n=6). Due to the busy nature of the study settings,
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39 193 opportunistic sampling was used to recruit as many HCPs as possible with a range
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41 194 of roles and experience.²¹ During recruitment, if HCPs stated they were too busy to
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43 195 answer questions they were marked as “unavailable” and not approached again that
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45 196 day; this did not exclude them from participating at another time. HCPs were also
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47 197 recruited until theoretical saturation was achieved;²⁴ A total of 21 HCPs participated.
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53 54 55 199 **2.3 Sample Size**

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3 200 As well as saturation being reached for both participant groups independently,
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5 201 the resulting sample size of 41 participants for this study was in accordance with
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7 202 Baker and Edwards' review of sample sizes utilised in qualitative literature, indicating
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9 203 it was sufficient for achieving overall data saturation.²⁵
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16 205 **2.4 Data collection**

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19 206 The inpatient data analysed for this study is independent from the outpatient
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21 207 study and was collected from different patients using separate topic guides.
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23 208 Regarding HCP data, this study involves secondary analysis of HCP interviews
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25 209 (n=17) included in the outpatient study from participants who were also involved in
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27 210 inpatient care. A small number of additional interviews with HCPs solely involved in
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29 211 inpatient care (n=4) have also been analysed in this study. All HCP interviews in the
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31 212 India handover project were conducted within the same study period and used the
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33 213 same topic guide (as most HCPs in the study areas worked with both outpatients
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35 214 and inpatients on a daily basis).
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41 215 All interview data was collected entirely by the lead Indian researcher (SJ – an
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43 216 experienced public health researcher) who was familiar with, but not local to, all
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45 217 study areas and fluent in all local Indian dialects and English. Full consideration was
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47 218 given prior to and throughout data collection to ensure that SJ was aware of the
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49 219 potential limitations of working with participants from culturally and linguistically
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51 220 diverse backgrounds. SJ was not involved in the treatment of patients or previously
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53 221 known to HCPs.
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58 222 The majority (n=16) of patient interviews took place in study hospitals. Due to
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60 223 a lack of private spaces, they were conducted on inpatient wards in as quiet and

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3 224 private a manner as possible. All participants consented to this and it was ensured
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5 225 that HCPs were not present during patient interviews. In addition, a small number of
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7 226 patient interviews (n=4) took place in patients' homes either five weeks (n=2) or four
8
9 227 months (n=2) following hospital discharge, as this was more convenient for them (i.e.
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11 228 during recruitment they were in the process of being discharged and leaving
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13 229 hospital). The specific follow-up times coincided with community visits being
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15 230 completed for another quantitative study within the India handover project, which the
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17 231 four patients were also participating in. All HCP interviews took place in hospital
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19 232 offices. Interviews with patients and HCPs were conducted in either Hindi, English,
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21 233 Malayalam or a mixture depending on interviewee preference and audio recorded
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23 234 using a digital Dictaphone.
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29 235 Data collection took place in two stages. In the first stage (December 2014–
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31 236 October 2015), pre-prepared topic guides were used to guide interviews. These were
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33 237 developed using relevant handover literature and local knowledge of health systems
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35 238 functioning within the study areas. They were also piloted over three rounds prior to
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37 239 commencement of data collection to ensure they were clear as well as culturally and
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39 240 contextually appropriate. Patient topic guides included open-ended questions
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41 241 focussing on healthcare utilisation and experiences and attitudes of healthcare visits
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43 242 and information exchange. The HCP topic guides differed slightly to capture
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45 243 information on health systems policies and/or practices; it also included questions
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47 244 regarding handover training and potential interventions for improving practices.
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52 245 Following the first stage of data collection, on the 11th of October 2015, a
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54 246 handover expert meeting took place in Delhi, India to present preliminary findings
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56 247 and discuss possible interventions. Researchers from the University of Birmingham
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58 248 and the University of Warwick (UK) facilitated the presentation of results and group
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3 249 discussions at the meeting. Representatives (n=27) from the following international,
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5 250 Indian national and state-level organisations participated: The World Health
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7 251 Organisation; The World Bank; ACCESS Health International; The Ministry of Health
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9 252 and Family Welfare; The Public Health Foundation of India; The National Centre for
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11 253 Disease Control; The Centre for Chronic Disease Control; The National Health
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13 254 System Resource Centre; The All India Institute of Medical Sciences; Aga Khan
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15 255 Health Services; AMRITA Institute of Medical Sciences and Fortis Hospitals. During
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17 256 discussions, a consensus was reached that patient-held booklets were likely to be an
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19 257 acceptable and sustainable intervention to improve information exchange. This was
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21 258 based on the international success of similar patient-held records used in maternal
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23 259 healthcare around the world.²⁶⁻³⁰ It also took into account the delays in developing
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25 260 universal electronic information systems and the fact that such systems will not
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27 261 necessarily address the quality of communication between HCPs and patients.
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29 262 Overall, it was opted as the most pragmatic, cost-effective intervention and multiple
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31 263 experts felt that booklets could also improve patient self-management if they
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33 264 contained disease-specific advice.

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40 265 Therefore, following the meeting the second stage of qualitative data
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42 266 collection (October–November 2015) commenced. Topic guides were updated to
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44 267 include questions regarding the utility of patient-held booklets. In addition, if
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46 268 participants stated they had limited time then researchers interviewed them using a
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48 269 shortened topic guide containing targeted questions on patient-held booklets.
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54 55 56 271 **2.5 Data Analysis**

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3 272 All audio recordings of interviews were transcribed verbatim and, if necessary,
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5 273 translated into English by SJ. All translations were crosschecked for accuracy by a
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7 274 qualitative expert in India (SG – professor of bioethics and social and behavioural
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9 275 sciences with expertise in NCDs), who was also familiar with the local context and
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11 276 fluent in all languages used during interviews. Following this, all transcripts were sent
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13 277 to the lead UK researcher (CH – public health PhD student) for analysis. CH became
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15 278 familiar with all study sites prior to analysis during multiple research-related visits
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17 279 that were facilitated by the Public Health Foundation of India and the Ministry of
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19 280 Health and Family Welfare in Kerala.

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24 281 Data was analysed using the Framework Method,³¹ as this is the method most
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26 282 commonly used for semi-structured interview transcripts. An inductive thematic
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28 283 approach to analysis utilised in Grounded Theory was employed,^{32 33} which focused
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30 284 on analysing interviews in their entirety and identifying concepts relevant to handover
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32 285 and healthcare communication during inpatient care that emerged from interviews.
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34 286 Analysis occurred through the following stages central to the Framework Method:
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36 287 transcription, familiarisation, coding, charting, and interpretation. Over a one-month
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38 288 period, familiarisation with the data took place via the slow reading of transcripts and
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40 289 CH consulted with SJ to gain a clear understanding of interview contexts. Once this
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42 290 was complete, coding began and two transcripts were chosen at random from each
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44 291 batch of interviews (i.e. 2 patient and 2 HCP transcripts) for independent coding by
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46 292 an additional UK analyst (SG – professor of medical sociology with expertise in
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48 293 cross-cultural research) for analyst triangulation.³⁴ Patient and HCP transcripts were
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50 294 coded separately in order to be able to assess similarities and differences between
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52 295 participant groups - patient transcripts were coded first. The coding process involved
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54 296 further familiarisation with the data, followed by open coding where certain transcript
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3 297 content was highlighted and allocated descriptive labels (codes) to interpret the
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5 298 phenomena identified in the text. The development of codes and themes was
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7
8 299 entirely data-led and analysed manually.³⁵
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11 300 Microsoft Excel was used to organise participant codes. CH created initial
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13 301 categories by clustering similar codes developed from the two randomly selected
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15 302 patient and HCP transcripts. CH and the additional UK analyst (SG) then met to
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17 303 discuss their analyses. As both had produced similar codes and concepts, the
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19 304 categories that were created were mutually agreed upon. CH then continued with
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21 305 category development until all transcripts had been coded and inserted into the
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23 306 spreadsheet. Following analysis of 20 patient and 21 HCP transcripts, no new
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25 307 categories had been produced. This served as confirmation that data saturation had
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27 308 been met.²⁴
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33 309 Following coding, categories were grouped into subcategories and linked to
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35 310 produce themes. Then, via the process of charting,^{31 35} themes for each participant
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37 311 group were used to create a framework matrix into which participants' quotes were
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39 312 inserted, corresponding to their representative subcategory. This provided a visual
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41 313 representation of themes, which facilitated the mapping and interpretation of the
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43 314 data. After completing separate analysis of patient and HCP data, the results of both
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45 315 participant groups were compared to assess similarities and differences between
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47 316 their reports of knowledge, attitudes and barriers to handover and healthcare
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49 317 communication. A Venn diagram was used to summarise the separate and
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51 318 overlapping content, which was linked to subcategories from original themes.
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58 320 **2.7 Patient and public involvement**

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3 321 Patients and the public were not involved in the initial design of this study.
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5 322 Patients and carers were first involved during the pilot phase prior to formal data
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7 323 collection, where the topic guides, consent and information sheets were piloted over
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9 324 three rounds. During this time, they were consulted and given the opportunity to
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11 325 provide feedback to ensure the study materials were comprehensible and culturally
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13 326 and contextually appropriate. Patients and the public were not involved in any other
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15 327 aspect of the study recruitment or conduct, but findings have been disseminated
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17 328 publicly via an expert meeting (including professionals working with patient groups)
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19 329 and open access web pages.
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32 332 **3. RESULTS**

33 333 **3.1 Patient characteristics**

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36 334 20 male (n=10) and female (n=10) patients aged between 25 and 72 years old
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38 335 were interviewed. Participants' background characteristics were varied (Table 1).
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40 336 Patients completed interviews in English (n=11), Hindi (n=4), Malayalam (n=4) and a
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42 337 mixture of Hindi and English (n=1).
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Table 1. Patient characteristics

Characteristics	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	N (%)
Age	65	45	70	58	71	56	57	70	55	25	72	50	55	69	70	50	70	70	70	70	25-72
Sex																					
Male	✓	✓	✓	✓	✓				✓	✓	✓	✓				✓					10 (50.0)
Female						✓	✓	✓					✓	✓	✓		✓	✓	✓	✓	10 (50.0)
Literacy																					
Illiterate								✓					✓		✓	✓	✓	✓	✓	✓	8 (40.0)
Literate	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓							12 (60.0)
Education Level																					
None/minimal primary school-level								✓				✓	✓		✓	✓	✓	✓	✓	✓	9 (45.0)
Completed lower primary school					✓		✓														2 (10.0)
Completed upper primary school						✓															1 (5.0)
Completed secondary school									✓												1 (5.0)
University graduate (or above)	✓			✓						✓	✓										4 (20.0)
No data		✓	✓											✓							3 (15.0)
Employment Status																					
Employed		✓		✓	✓				✓			✓	✓	✓		✓					8 (40.0)
Unemployed						✓	✓	✓							✓		✓	✓	✓	✓	8 (40.0)
Student										✓											1 (5.0)
Retired	✓		✓								✓										3 (15.0)
Chronic NCD(s) (related to admission)*																					
Chronic Respiratory Disease			✓	✓		✓		✓					✓			✓					6 (30.0)
Diabetes	✓													✓	✓	✓	✓	✓	✓	✓	8 (40.0)
Hypertension									✓	✓	✓	✓				✓	✓	✓			6 (30.0)
Cardiovascular Disease (other than Hypertension alone)	✓	✓			✓		✓	✓	✓	✓	✓	✓									9 (45.0)
Language(s) used during Interview																					
English (only)	✓	✓	✓	✓										✓	✓	✓	✓	✓	✓	✓	11 (55.0)
Hindi (only)						✓	✓	✓	✓												4 (20.0)
Malayalam (only)										✓	✓	✓	✓								4 (20.0)
English & Hindi (mixture)					✓																1 (5.0)

* Patients could select more than one answer for this question

3.2 Healthcare Professional characteristics

21 male (n=15) and female (n=6) HCPs aged between 22 and 55 years old were interviewed. HCP roles included doctors (n=17), nurses (n=2), pharmacists (n=1) and a medical records officer (n=1). HCP qualifications and experience were varied (Table 2). HCPs completed interviews in English (n=15), Hindi (n=2), Malayalam (n=2) and a mixture of Hindi and English (n=2).

For peer review only

Table 2. Healthcare professional characteristics

Characteristics	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	N (%)
Age	44	24	33	25	23	39	44	35	52	50	50	43	50	40	46	55	22	35	35	45	35	22-55
Sex																						
Male	✓		✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓				✓	15 (71.4)
Female		✓				✓		✓										✓	✓		✓	6 (28.6)
Qualification/s*																						
Doctor of Medicine (MD)	✓		✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					13 (61.9)
Master of Public Health (MPH)						✓																1 (4.8)
Bachelor of Medicine (MBBS)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					17 (81.0)
BSc Nursing																		✓			✓	2 (9.5)
BSc Pharmacy																			✓			1 (4.8)
Graduate (i.e. non-medical degree)																					✓	1 (4.8)
Official position																						
Medical Superintendent						✓																1 (4.8)
Chief Medical Officer									✓													1 (4.8)
Medical Officer											✓											1 (4.8)
Consultant	✓		✓				✓	✓					✓	✓	✓	✓	✓					9 (42.9)
Surgeon		✓								✓												2 (9.5)
General Medicine										✓												1 (4.8)
Intern Doctor				✓	✓																	2 (9.5)
Ward Nurse																		✓			✓	2 (9.5)
Pharmacist																			✓			1 (4.8)
Medical Records Officer																					✓	1 (4.8)
Years of experience in position																						
<1		✓			✓																	2 (9.5)
1 – 3				✓																		1 (4.8)
4 – 6						✓		✓										✓		✓	✓	5 (23.8)
7 – 10			✓				✓													✓		3 (14.3)
>10	✓								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			10 (47.6)
Place of work																						
General Hospital		✓	✓	✓	✓									✓		✓	✓	✓	✓			9 (42.9)
Regional Hospital	✓								✓	✓	✓		✓							✓	✓	7 (33.3)
Taluk Hospital						✓	✓	✓			✓				✓							5 (23.8)
Language(s) used during interview																						
English (only)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					15 (71.4)
Hindi (only)																				✓	✓	2 (9.5)
Malayalam (only)																		✓	✓			2 (9.5)
English & Hindi (mixture)	✓											✓										2 (9.5)

* HCPs could select more than one answer for this question

344 3.3 Charted Data

345 During analysis of patient and HCP data, three themes (with subcategories)
346 emerged for each participant group. Patient themes were: 1) Public healthcare
347 service characteristics, 2) HCP to patient communication and 3) Attitudes regarding
348 medical information (Table 3). HCP themes were: 1) System factors, 2) Information
349 exchange practices and 3) Quality improvement strategies (Table 4).

350 Following separate analysis of patient and HCP data, the results of both
351 participant groups were compared to assess similarities and differences between
352 their reports of knowledge, attitudes and barriers to handover and healthcare
353 communication; the results of this comparison are displayed in Figure 1. The
354 similarities will be described first, followed by the differences. To ensure
355 confidentiality, numerical pseudonyms have been used when presenting quotes.

Table 3. Summary of charted data for inpatients (IPs)

IP	Public healthcare service characteristics		HCP to patient communication			Attitudes regarding medical information		
	Large patient loads	Deficient primary care services	Verbal healthcare information during admission	Referral information	Impoliteness/impatience	Transportation of medical documents	Patient-held booklet intervention	Dissatisfaction with lifestyle advice
1						✓		
2			✓					
3	✓		✓		✓	✓		
4			✓			✓		
5		✓	✓	✓	✓			
6				✓		✓		
7	✓	✓		✓		✓		
8				✓				
9			✓					
10			✓					
11	✓		✓			✓		
12			✓	✓		✓		
13			✓			✓		
14		✓	✓				✓	✓
15		✓	✓		✓		✓	✓
16		✓	✓			✓	✓	
17			✓			✓	✓	✓
18		✓	✓			✓	✓	
19			✓			✓	✓	
20			✓				✓	✓

Table 4. Summary of charted data for healthcare professionals (HCPs)

HCP	System factors		Information exchange practices					Quality improvement strategies				
	Time & resource constraints	Absence of handover communication training	Absence of structured formats for information exchange between HCPs	Hospital record keeping	Ad-hoc phone calls	Patient-held medical documents	Discharge instructions	Hierarchical transfer of responsibility	Increase resource provision	Introduce formal referral systems	Implement "e-health" systems	Patient-held booklet intervention
1			✓			✓	✓		✓			
2			✓			✓	✓					
3						✓			✓	✓	✓	
4	✓		✓			✓	✓					
5			✓	✓		✓						
6	✓		✓						✓		✓	
7	✓		✓			✓						
8	✓					✓						
9									✓			
10	✓	✓	✓			✓	✓					
11	✓	✓	✓						✓	✓		
12				✓		✓			✓		✓	
13	✓									✓		✓
14	✓											✓
15	✓					✓						✓
16												✓
17	✓							✓				✓
18				✓		✓	✓	✓				
19	✓			✓								
20				✓								
21	✓							✓				

3.4 Overlapping content

3.4.1 Public healthcare constraints

During interviews, a number of patients reported that they chose to visit public hospitals because of the better availability of healthcare staff compared to local healthcare facilities, such as smaller hospitals and primary/community health centres:

"We have very limited time, we did go to local hospital but doctors are not there. So if we get time we will come here rather than going to a hospital where there are no doctors. (IP 15)"

However, multiple patients also reported that public hospitals were often crowded with high daily patient loads:

"There is so much crowd there you can't ask or hear anything there... so many people are there now, you cannot do anything. (IP 11)"

The human resource issues at public primary and community healthcare facilities were also mentioned by HCPs:

"It will be useful if availability of doctors is ensured at the peripheral institutions around the clock. At times it is not there. (DOC 1)"

Additionally, in our study settings most hospital doctors worked in both outpatient clinics and inpatient wards on a daily basis. Many doctors expressed concerns of time pressures due to the large patient volumes seen at hospital outpatient clinics and the subsequent lack of time they had to attend to all patients:

1
2
3 377 *“We can hardly spend five minutes with each patient, seeing the crowd you will*
4
5 378 *just want to finish everyone soon. (DOC 7)”*
6
7

8 379 Some doctors also reported that human and medical resource constraints across
9
10 public healthcare facilities were hindering the quality of care that could be provided:
11
12

13 381 *“[It’s] not [about] motivation, [it’s about] resource limitation. It’s not humanly*
14
15 382 *possible to see people every day for seven days. Quality definitely gets*
16
17 383 *compromised. (DOC 3)”*
18
19
20

21 384

24 385 **3.4.2 Referral communication**

25
26
27 386 A number of patients who recalled being referred from a previous healthcare
28
29 387 facility to the hospital reported that they were not provided with any referral
30
31 388 information:
32
33

34
35 389 *“No, they didn’t give any parchi [papers]. We were getting medicines right only*
36
37 390 *that is with us. (IP 8)”*
38
39

40 391 HCPs also discussed referral communication. Doctors explained that there
41
42 392 were no structured processes to follow for information exchange during referrals:
43
44

45 393 *“Yeah there is no proper way of doing it... inpatients sometimes we have to*
46
47 394 *[refer] but as I told you we never had a structured format. (DOC 14)”*
48
49

50
51 395 Despite the lack of structured systems, some doctors explained that they
52
53 396 would make ad-hoc calls to ensure that some information was transferred when
54
55 397 referring a patient. However, this appeared to depend on how well they knew the
56
57 398 patient or doctor:
58
59
60

1
2
3 399 *“Sometimes I call the doctor to tell them that so and so is coming. Please do*
4
5 400 *the needful. If I know the patient or doctor. (DOC 11)”*
6
7

8 401
9

10 11 402 **3.4.3 Patient-held medical information** 12 13

14 403 At the point of hospital admission, patient-held notes and/or medical records
15
16 404 can facilitate optimal care by providing HCPs with key patient-specific information.
17
18 405 When asked about whether they brought medical papers to the hospital, most
19
20 406 patients reported that they regularly stored and transported papers to HCP visits;
21
22 407 these included referral notes, prescription cards, test results and other records from
23
24 408 inpatient/outpatient/primary care:
25
26

27
28
29 409 *““Yeah we have always kept everything safely. [Shows researcher a bag with*
30
31 410 *all sort of papers like reports, lab tests, etc.] (IP 3)”*
32
33

34 411 Doctors also talked about patient-held medical information during interviews.
35
36 412 For example, some doctors reported that patients regularly kept and transported
37
38 413 their medical records:
39
40

41
42 414 *“Almost everyone comes with medical reports. (DOC 11)”*
43
44

45 415 However, other doctors described that, in their experience, the availability of
46
47 416 patient-held records was less consistent and that this could have a negative impact
48
49 417 on the continuity of care provided:
50
51

52 418 *“Some of them do bring investigations and all others don’t bring much and we*
53
54 419 *have to work out what happened from the start. (DOC 3)”*
55
56

57
58 420
59
60

3.4.4 Healthcare management communication

When asked about verbal HCP communication, many patients reported that during admission and/or discharge a HCP had provided them with some basic verbal healthcare management information (i.e. medication, treatment, lifestyle and/or follow-up requirements). However, the quantity of information received appeared to vary notably between patients. For example, some recalled being given detailed instructions:

“Doctor says everything. I was given medicines and now they asked me to take injections also. Doctor is saying I am not controlling my sugar. The nurse taught me how to take injection. (IP 19)”

Conversely, others appeared to receive relatively limited information and one carer reported having to seek healthcare advice from alternative sources:

“Doctors don’t explain everything. We speak to our friends and get details from them. (Carer - IP 16)”

HCPs also discussed their healthcare communication practices with patients. Whilst talking about discharge, a nurse described the usual amount of time taken to explain information to each patient:

“Usually we take 20 to 25 minutes to instruct the patients. If the patients understand then it can be even faster. (NUR 1)”

Doctors reported that they provided patients with documented information on discharge cards and verbally advised patients to return to their local HCP/healthcare institution during the discharge consultation:

1
2
3 443 *"We give them a discharge card. Discharge card is there we have written and*
4
5 444 *then we refer them to the local hospital or where they come from. (DOC 15)"*
6
7
8

9 445

10 11 12 446 **3.4.5 Booklet intervention**

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14
15 447 During interviews that took place after the handover expert meeting, patients
16
17 448 were asked for their opinion regarding the utility of a patient-held booklet where
18
19 449 records could be stored, organised and transported to HCP visits. Most appeared to
20
21 450 think that it could be effective and help with self-management, including those who
22
23 451 were illiterate:

24
25
26
27 452 *"Yeah, sometimes we don't know what to do so it would be good if some*
28
29 453 *paper is there to help us. We can't read it ourselves but our son or daughter-*
30
31 454 *in-law can help us. (IP 17)"*
32
33

34
35 455 HCPs were also asked for their opinions regarding the booklet intervention.
36
37 456 Many generally felt it could be useful, but various conditions and/or reservations
38
39 457 were also expressed. For example, doctors felt that the success of the booklet would
40
41 458 rely on patient attitudes:

42
43
44
45 459 *"That will depend on the patients, if they maintain that and bring it every time.*
46
47 460 *For us there is no change, we write our observations in paper or notebook,*
48
49 461 *doesn't matter... Might be helpful. (DOC 22)"*
50
51

52 462 Related to this, one doctor felt that in order to see the most benefit, patients
53
54 463 needed to be regularly instructed to keep and transport their medical documents:

55
56
57 464 *"We write the communication but the patients don't keep them proper. I think*
58
59 465 *we have to tell the patients to keep the letters and papers. (DOC 4)"*
60

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3.5 Content unique to patients

3.5.1 Attitudes regarding HCP communication during admission

16 470 A few patients recalled receiving some impolite/impatient treatment from
17
18 471 healthcare staff during their hospital admission:

21 472 *“The doctors don’t speak much. They explain but get angry if you don’t*
22
23 473 *understand them. (IP 3)”*

26 474 In addition, some patients expressed dissatisfaction with the lifestyle advice
27
28
29 475 provided. In particular, patients of lower socioeconomic status felt that nutritional
30
31 476 instructions were not suitable for them due to their time and financial constraints:

34 477 *“We are daily labourers we can’t follow all the instructions... We can’t follow*
35
36 478 *that, we are poor we do hard work and we just can’t concentrate on eating.*
37
38 479 *Whatever is there we just eat. (IP 15)”*

40
41
42 480
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45

3.6 Content unique to HCPs

3.6.1 Institutional/systemic factors

52 483 Some doctors displayed good knowledge of the key information that should
53
54 484 be transferred during patient referrals/transfers and/or hospital discharge.

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1
2
3 485 *“To another hospital, yeah first we have to write what are the main complaints*
4
5 486 *of patients presenting illness and write about the past history, then we will*
6
7 487 *write about what all investigations we have done here ‘til the day of transfer,*
8
9 488 *then what is the condition of the patient we are discharging, why we are*
10
11 489 *discharging (and) any investigations, major investigations, to be done. (DOC*
12
13 490 *2)”*

14
15
16
17
18 491 However, when asked about training opportunities, numerous doctors
19
20 492 mentioned that they had not received any formal handover training. Some recalled
21
22 493 that this type of training was not provided at medical school:

23
24
25 494 *“I think it was not there in medical curriculum. (DOC 1)”*

26
27
28 495 Others reported that training was not provided in their workplace/s and
29
30 496 instead they learned on the job:

31
32
33 497 *“We are sent to the wards, we see what our seniors do and we do that’s all.*
34
35 498 *We have to develop our communication skills ourselves no formal training is*
36
37 499 *there. (DOC 14)”*

38
39
40
41 500 When asked about hospital record keeping, a medical records officer stated
42
43 501 that inpatient records are stored in hospitals following patient discharge for up to ten
44
45 502 years. However, the same officer also indicated that these paper-based records are
46
47 503 not easily accessible:

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49
50
51 504 *“Definitely I can locate any record but it might take some time to locate them.*
52
53 505 *(MRO 1)”*

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55
56 506

57
58
59 507 **3.6.2 Organisational culture**
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1
2
3 508 Based on reports from both doctors and nurses, it appeared as though some
4
5 509 hierarchical transfer of responsibility for documented handover communication took
6
7
8 510 place in hospitals. For example, a senior doctor mentioned that they instructed
9
10 511 medical interns to write notes for them when their patient load was high:

11
12
13 512 *“We do write in the papers, whether it’s discharge card or outpatient sheets.*
14
15 513 *When patient load is high, then we tell our interns to do it for us, we check that*
16
17 514 *and then sign. (DOC 22)”*

18
19
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21 515

22 23 516 **3.6.3 Requirements for improving information exchange**

24
25
26
27 517 During interviews, HCPs were asked for their thoughts on requirements to
28
29 518 improve information exchange between HCPs and between HCPs and patients.
30
31 519 Numerous doctors felt that there needed to be a notable increase in public
32
33
34 520 healthcare resource provision:

35
36
37 521 *“Infrastructure is very small but the outpatient department is ten times more*
38
39 522 *than it can manage, so more posts should be created... We have to increase*
40
41 523 *the manpower and also our materials. (DOC 15)”*

42
43
44 524 Some doctors also discussed the idea of introducing structured referral
45
46 525 documents and systems to improve referral communication:

47
48
49 526 *“You can supply people with [referral] forms and make it mandatory that*
50
51 527 *residents have to maintain a register. In that case they will maintain the*
52
53 528 *register. (DOC 3)”*

54
55
56
57 529 In addition, whilst discussing current information systems, one doctor in
58
59 530 Kerala reported that an application had been made for a near-future transition to

1
2
3 531 computerised healthcare information systems. This appeared to be a state-wide plan
4
5 532 for public healthcare facilities:
6
7

8 533 *“We have submitted a proposal for paperless computerisation system for*
9
10 534 *doctors, so I think state-wide they are planning to do that. (DOC 6)”*
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18 19 20 537 **4. DISCUSSION**

21 22 23 24 538 **4.1 Main findings**

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26
27 539 This study presents qualitative data on patient and HCP knowledge, attitudes
28
29
30 540 and barriers to handover and healthcare communication during public hospital
31
32 541 inpatient care in Kerala and Himachal Pradesh states, India. The main findings are
33
34 542 that verbal and documented information exchange between HCPs and between
35
36 543 HCPs and patients is often suboptimal during referrals/transfers, hospital admission
37
38 544 and discharge, with a lack of structured systems and HCP education in place to
39
40 545 ensure sufficient continuity of care. Whilst unique themes emerged for both patients
41
42 546 and HCPs, a comparison of the results from each participant group showed that
43
44 547 there was also a notable amount of overlapping content. The results have
45
46 548 highlighted the challenging and multifaceted nature of handover and healthcare
47
48 549 communication during inpatient care in India. With regard to public health, the
49
50 550 findings have also elucidated a number of key areas to address to improve the
51
52 551 continuity and safety of chronic NCD patient care.
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2
3 552 Some of the results from the current study reflect and reinforce findings from
4
5 553 previous research focussing on outpatient care in the same study areas of India.²⁰ In
6
7 554 particular, during interviews in both studies, patients and HCPs recognised the
8
9 555 resource constraints affecting public healthcare. The main issue reported was
10
11 556 deficient primary healthcare services, which is in line with well-established findings of
12
13 557 limited primary care infrastructure across India and numerous LMICs.³⁶ In our study
14
15 558 settings, under-resourced primary care resulted in many patients preferring to visit
16
17 559 hospitals as the first point of care. Subsequently, large patient loads were seen in
18
19 560 both outpatient and inpatient departments, which limited HCP consultation times.
20
21 561 Other key areas of discussion in the current study reflected in the outpatient findings
22
23 562 were inconsistent transportation of patient-held medical documents and views
24
25 563 regarding the utility of patient-held booklets. Whilst more inpatients than outpatients
26
27 564 reported that they regularly transported records to HCP visits, doctors recalled
28
29 565 seeing many patients who did not bring information to the hospital. This was
30
31 566 problematic as if patients did not bring their records, then doctors had to gather
32
33 567 details from scratch, potentially compromising their continuity of care. When asked
34
35 568 about the possible utility of introducing patient-held booklets to store and transport
36
37 569 medical documents, inpatients had similar views to outpatients which were generally
38
39 570 positive but also felt that the inclusion of self-management information would be
40
41 571 beneficial. Doctors in the current study expressed a wider variety of views regarding
42
43 572 booklets but broadly thought that they could be useful if patients had positive
44
45 573 attitudes towards their maintenance and use.

54 574 Regarding referral communication, the current study also highlighted similar
55
56 575 issues of deficient information exchange observed in the previous outpatient study.²⁰
57
58 576 For example, reports from both HCPs and patients revealed that that documented
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60

1
2
3 577 information was often provided in the form of minimal, hand-written notes on papers
4
5 578 provided for other purposes (e.g. prescription cards). These findings reflect results
6
7 579 from other LMIC studies that have evidenced the exchange of poor-quality referral
8
9 580 documents.^{14 37-39} However, the current study also evidenced patient reports of not
10
11 581 being provided with any documented information during referrals. Further, whilst a
12
13 582 small number of inpatient HCPs in the current study explained that they called HCPs
14
15 583 to discuss a referral case, this appeared to be dependent on how well they knew the
16
17 584 patient or HCP. Such findings indicate that there are further inconsistencies in
18
19 585 referral communication practices than previously described. Overall, such deficits are
20
21 586 unsurprising given that multiple HCPs in both the current and previous outpatient
22
23 587 study reported an absence of structured systems and education provided for
24
25 588 handover communication. These findings are also in line with the few previous
26
27 589 descriptions from India of an absence of training and protocols for handover
28
29 590 practices.¹⁵⁻¹⁷

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34
35 591 In addition to similarities found with previous research, the current study has
36
37 592 elucidated numerous novel insights regarding handover and healthcare
38
39 593 communication during critical points in inpatient care, which were previously
40
41 594 unexplored in the study areas of India. Regarding inpatient medical record keeping,
42
43 595 a records officer reported that hospital records were not easily accessible and rarely
44
45 596 retrieved. Alongside the inconsistent transportation of patient-held records, this lack
46
47 597 of available medical information carries notable risks for patient safety. This is
48
49 598 because, without key patient background and/or treatment details, critical oversights
50
51 599 can be made that result in adverse events.^{4 5 7} Additionally, there were notable
52
53 600 variations in patient reports of the provision of healthcare management information
54
55 601 during hospital admission and discharge; whilst some patients reported being given
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1
2
3 602 clear self-care instructions, others stated that they sought information from external
4
5 603 sources due to the lack of detail provided by hospital HCPs. It appears that the time
6
7 604 pressures experienced by HCPs were a significant contributory factor to
8
9
10 605 inconsistencies in HCP to patient communication, particularly at the point of
11
12 606 discharge. During interviews, senior doctors reported often being so busy with high
13
14 607 patient loads that they would pass the duty of writing discharge notes to interns or
15
16
17 608 nurses. Additionally, it seemed that more time was spent on verbal discharge
18
19 609 communication, with a nurse reporting that they typically took approximately twenty
20
21 610 minutes per patient to explain discharge instructions. Such practices may be
22
23 611 compromising the retention of key healthcare information, as global literature
24
25 612 suggests that patients can struggle to absorb verbal details provided during
26
27
28 613 consultations.⁴⁰ The potential implications of these findings are significant, given
29
30 614 the associations that have been found between deficient discharge communication
31
32
33 615 and an increased likelihood of adverse events.⁷⁻¹⁰

34
35 616 Other key issues affecting handover and healthcare communication during
36
37 617 admission and discharge were mentioned solely by each participant group. For
38
39 618 patients, some recalled receiving impolite treatment from hospital doctors during
40
41
42 619 admission. Additionally, a small number of patients were dissatisfied with the take-
43
44 620 home nutritional advice provided, as they felt it failed to take into account their
45
46
47 621 socioeconomic deprivation. These results may be explained by the reported lack of
48
49 622 communication training in medical education, as well as a historic tendency for
50
51 623 paternalistic physician conduct in India.⁴¹ In other areas of India and Asia, research
52
53 624 on HCP-patient communication has also evidenced asymmetric power balances and
54
55
56 625 patient dissatisfaction during patient consultations.⁴² Such findings reveal the need
57
58 626 for more patient-centred communication, particularly for poorer patients that make up
59
60

1
2
3 627 a significant proportion of public healthcare users. As for HCPs, during interviews
4
5 628 many doctors recognised the need for an increase in public healthcare resource
6
7 629 provision, as well as structured systems for information exchange. Some also
8
9
10 630 discussed the promise of implementing “e-health” systems, with a doctor in Kerala
11
12 631 reporting that public healthcare facilities across the state will be transitioning to
13
14 632 computerised systems. Whilst our colleagues from Kerala report that this
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16
17 633 development is in its early stages, it holds potential as similar systems have
18
19 634 advanced the accessibility and quality of healthcare information around the world.⁴³
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21 635 44
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24 636

25 26 637 **4.2 Strengths and limitations**

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29
30 638 As far as the authors are aware, this is the first study to qualitatively explore
31
32 639 both patient and HCP knowledge, attitudes and barriers to multiple areas of
33
34 640 handover and healthcare communication during chronic NCD inpatient care in India.
35
36
37 641 The use of qualitative methodology and inclusion of multiple healthcare sites has
38
39 642 revealed a number of key issues that are supported among the HIC and emerging
40
41 643 LMIC literature, suggesting likely transferability to other settings. Interviews with both
42
43
44 644 patients and HCPs have provided of a variety of valuable perspectives, which has
45
46 645 helped to identify critical areas impacting the continuity of chronic NCD inpatient
47
48 646 care. The number of interviews conducted helped to achieve data saturation for both
49
50 647 participant groups and study credibility was strengthened via the use of multi-analyst
51
52
53 648 triangulation.³⁴
54

55
56 649 The lack of documented inclusion/exclusion rates for participation is a
57
58 650 limitation, as this could not be recorded. In addition, the accuracy of recall of the
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60

1
2
3 651 minority of patients interviewed at home may have been limited by the delay
4
5 652 between recruitment and data collection. Recruitment challenges meant that patient
6
7 653 participants were predominantly older (i.e. 45yrs+), which limited exploration of
8
9 654 younger patient experiences; this was, however, largely unsurprising given the study
10
11 655 exclusively recruited patients with chronic NCDs. The cross-cultural nature of this
12
13 656 research may have resulted in constraints during data collection and analysis, as in-
14
15 657 group bias could have affected participants' willingness to openly converse with a
16
17 658 non-local researcher.⁴⁵ Social desirability bias from the use of individual interviews
18
19 659 and participant's awareness that the interviewer was a public health professional
20
21 660 may have also affected truthfulness of the data.⁴⁶ Despite these challenges, the
22
23 661 recurrence of themes indicating data saturation and the finding that our results are
24
25 662 supported by existing literature suggests that they had minimal impact.
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34 664 **4.3 Conclusions and next steps**

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37
38 665 This study has found that handover and healthcare communication for chronic
39
40 666 NCD inpatients during referrals/transfers, hospital admission and discharge is often
41
42 667 fragmented. The critical barriers appear to be an absence of structured information
43
44 668 exchange systems and HCP education. There is also a growing recognition of the
45
46 669 need for the government to strengthen primary healthcare infrastructure in line with
47
48 670 the declaration of Alma Alta.⁴⁷ This will greatly assist in increasing accessibility of
49
50 671 care and subsequently reducing pressure on hospital services. It will also be
51
52 672 required to address the United Nations' sustainable development goals regarding
53
54 673 universal health coverage and reducing premature deaths from NCDs.⁴⁸ In addition,
55
56 674 the implementation of structured documentation, systems and training is urgently
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1
2
3 675 required to manage critical care transitions such as referral and discharge. Research
4
5 676 from both HIC and LMIC settings has proven that such interventions can improve
6
7 677 continuity and safety of care.^{4 17 37 49} Regarding future steps, during HCP interviews it
8
9 678 was reported that public healthcare facilities in Kerala will be transitioning to
10
11 679 computerised “e-health” information systems. The Indian government has also since
12
13 680 pledged to digitise all public healthcare information systems in the country via an
14
15 681 “Integrated Health Information Platform”.⁵⁰ Whilst such developments hold promise
16
17 682 and are progressing in Kerala, they remain in their initial stages in many states and
18
19 683 face numerous infrastructural challenges. Additionally, they are not likely to target
20
21 684 issues regarding HCP to patient communication, patient access to healthcare
22
23 685 information and information exchange between public and private healthcare
24
25 686 providers.

26
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30
31 687 Therefore, a mixed-methods pilot study exploring the design and
32
33 688 implementation of patient-held record booklets is suggested. This could ameliorate
34
35 689 some of the current issues by incorporating disease-specific and structured
36
37 690 documents, which have been shown to improve the recording of clinical information
38
39 691 and can provide a means of organising records in a logical and accessible way.^{49 51}
40
41 692 ⁵² The patient-held nature of this strategy could also increase patient access to key
42
43 693 healthcare information, which may improve self-management. Given the
44
45 694 unstructured, predominantly paper-based systems utilised across the study sites,
46
47 695 this is an area for development that has been welcomed by Indian national and
48
49 696 international experts, as well as by patients and HCPs in our study areas. There
50
51 697 have also been multiple international successes of improved continuity of care via
52
53 698 utilisation of similar patient-held/home-based records in both outpatient and maternal
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55 699 and child healthcare.^{26-30 53} In order to maximise booklet utilisation, it would be
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3 700 necessary to address the issues surrounding patient retention and understanding of
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5 701 the importance of medical documents. Initial key steps could be to involve both
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7 702 patients and HCPs in the design process and accompany the introduction of
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9 703 booklets with relevant promotion, training and incentives.
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13 704 Finally, given the rising burden of NCDs across LMICs, this research is timely
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15 705 and crucial for effective health systems development. It is vital that further LMIC
16
17 706 research is conducted to explore critical factors affecting handover, continuity of care
18
19 707 and health systems integration and to develop sustainable and cost-effective
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21 708 interventions.
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36
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51 720 support.
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723 **AUTHOR CONTRIBUTIONS**

724 In order of the author list: CH: Data curation, formal analysis, visualisation,
725 writing (both original draft and final review and editing). SJ: Investigation, data
726 curation, project administration, writing (review and editing). JP: Conceptualisation,
727 funding acquisition, project administration, supervision, writing (review and editing).
728 SS: Funding acquisition, project administration, supervision, writing (review and
729 editing). SG(oenka): Funding acquisition, projection administration, supervision,
730 writing (review and editing). PD: Conceptualisation, funding acquisition, project
731 administration, supervision, writing (review and editing). PG: Conceptualisation, data
732 curation, funding acquisition, writing (review and editing). SG(reenfield): Funding
733 acquisition, formal analysis, writing (review and editing). RL: Conceptualisation,
734 funding acquisition, writing (review and editing). SMH: Conceptualisation, funding
735 acquisition, investigation, methodology, project administration, supervision, writing
736 (review and editing).

737

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56 746 **COMPETING INTERESTS STATEMENT**8
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10 747 The authors of this manuscript have no competing interests to disclose.
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22 750 **ETHICS APPROVAL**23
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25 751 This study was reviewed and approved by the Centre for Chronic Disease
26
27 752 Control Independent Ethics Committee, India, and the Amrita Institute of Medical
28
29 753 Sciences Institutional Ethics Committee, India. Data archives will be stored at the
30
31 754 University of Birmingham, in accordance with the University's code of practice.
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42 757 **DATA SHARING STATEMENT**43
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45 758 De-identified participant transcript data generated and analysed during the
46
47 759 current study are available from the corresponding author on reasonable request.
48
4950 760 Contact Details: Dr. Semira Manaseki-Holland, s.manasekiholland@bham.ac.uk.
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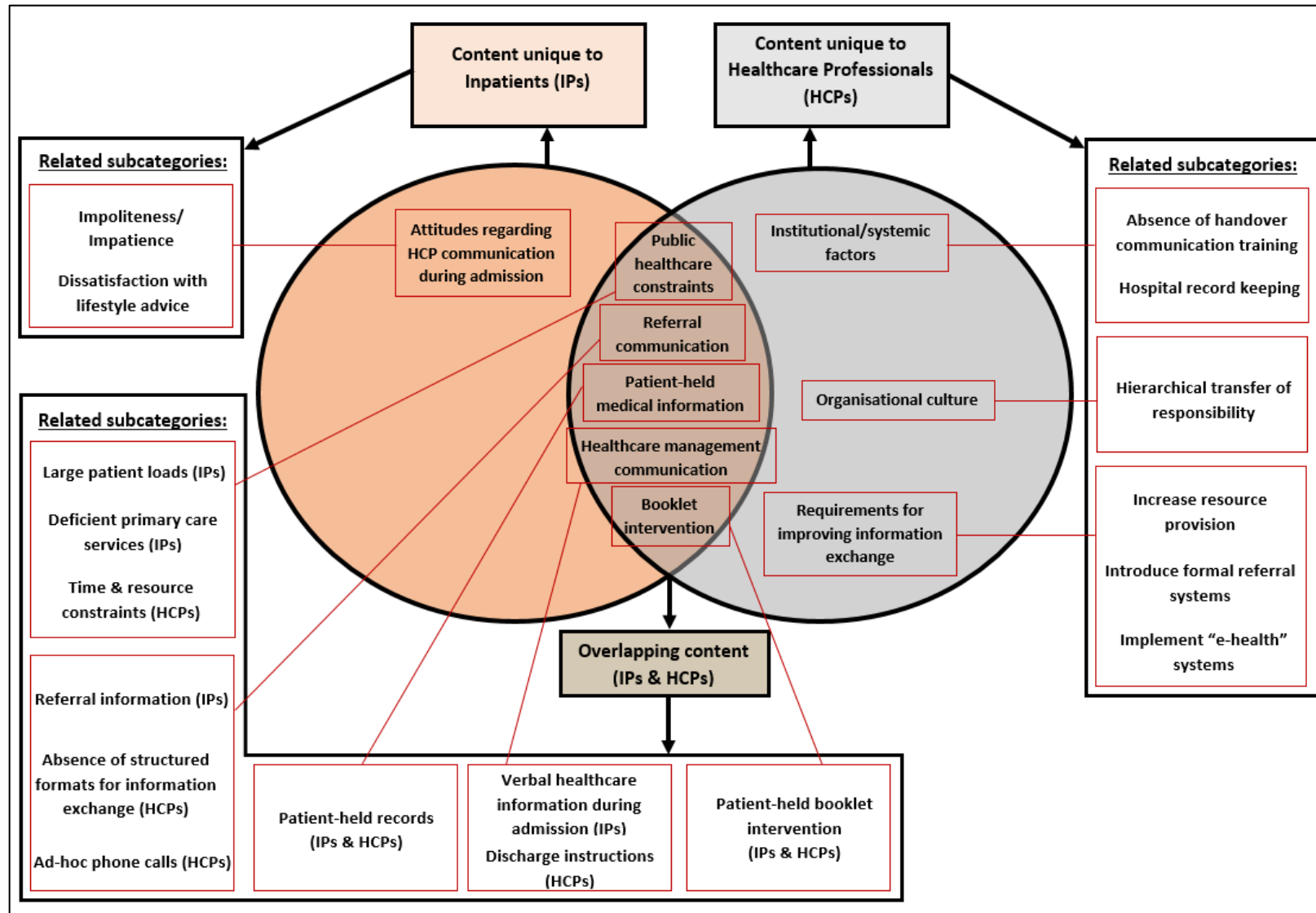
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Figure 1. Similarities and differences between the content of patient & HCP data with related subcategories



S1. Additional information regarding the Indian healthcare system

1. National context: structure of public healthcare system

The basic structure of the public healthcare system in India is as follows:¹

- National level: Ministry of Health and Family Welfare.
- State-level: State Department of Health and Family welfare in each state.
- Regional level: covers 3 - 5 districts. Headed by State Directorate of Health.
- District level: Middle-level management organisation serving as a link between the regional and state structures and the peripheral and PHC structures.
- Sub-divisional/Taluk level: Hospitals/hospitals with specialty care (Taluk headquarters hospitals). Healthcare services are rendered via the office of Assistant District Health and Family Welfare Officer.
- Community level: CHCs that cater for 80,000-120,000 population and PHCs that cover approximately 20,000 – 30,000 population.

2. Public healthcare in India

The quality of public healthcare across India varies notably between states and urban and rural areas. Whilst there are some examples of excellence in a select few states, generally the public sector is generally failing to meet the basic healthcare needs of the growing population. Services being too far away, a lack of trained personnel, deficient medical supplies and limited facility opening times are some of the principal reasons for current shortfalls.² Regarding primary health

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3 centres, government estimates have indicated that up to 10% are without a doctor,
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5 37% are without a laboratory technician and 25% are without a pharmacist.³ These
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7 issues appear to be particularly prevalent within socioeconomically vulnerable areas,
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9 where facilities have been reported to lack essential medical supplies and are closed
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11 more than 50% of the time. In addition, public healthcare facilities are often the sole
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13 source of qualified healthcare professionals in rural areas, which is where many of
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15 the most socioeconomically vulnerable live.²
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23 **3. Private healthcare in India**

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25 Due to a lack of prioritisation from economic planners, public healthcare in
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27 India has lacked funding over multiple decades. Therefore, the increasing
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29 prevalence of chronic diseases, as well as ongoing challenges of infectious
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31 diseases, has placed an enormous strain on public health systems that cannot be
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33 feasibly managed. Subsequently, the private healthcare sector has proliferated to
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35 meet the rising needs, expectations and earnings of the growing population. So
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37 much so in fact, that surveys now show that private providers dominate healthcare
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39 service provision in India.²
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44 At the top end of the market, the private healthcare sector has grown
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46 extensively and now has world-class facilities. Private hospital care has become an
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48 export sector for medical tourism that cares for around 200,000 international patients
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50 each year.⁴ However, private healthcare providers lack regulation and quality
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52 remains inconsistent across facilities. In many cases private facilities deliver services
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54 without appropriate equipment or expertise and, although it is preferential for many
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56 to visit private providers, high out-of-pocket costs are often incurred. It has been
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58 reported that more than 40% of private hospital patients have to sell assets or
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3 borrow money to fund their care.⁵ This means that many patients of lower
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5 socioeconomic status remain unable to access such care, while others fall further
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7 into poverty as a result of expenses.
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S2. Additional information regarding the study settings

1. Himachal Pradesh

Himachal Pradesh is principally a rural state in northern India. It has a population of 6.86 million people and the average literacy rate is 83.3%, which is higher than the national average (74%). However, rates remain notably lower for women compared to men (76.6% vs. 90.8%, respectively).⁶ Private HCPs are less prevalent in Himachal Pradesh compared to many states and utilisation of public healthcare remains relatively high.⁷ A recent study found that the availability of public health services in the state was deemed adequate as compared to standards of other hill states, but with an unequal distribution of resources across regions.⁸

2. Kerala

Kerala state is in the south-west of India. It has a population of 34.8 million people and a greater than national average urban-based population of 47.7%. It has the highest overall literacy rate of all the states in India (93.9%; men 96.1%, women 92.1%).⁹ There are a relatively large number of government healthcare facilities in Kerala but the healthcare environment has become increasingly complex due to the growing popularity and presence of private healthcare facilities, which are predominantly situated in urban settings. Despite this, public healthcare facilities in Kerala remain the first point of care for many patients and continue to deliver essential services.¹⁰

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Reporting checklist for qualitative study.

Based on the SRQR guidelines.

Instructions to authors

Complete this checklist by entering the page numbers from your manuscript where readers will find each of the items listed below.

Your article may not currently address all the items on the checklist. Please modify your text to include the missing information. If you are certain that an item does not apply, please write "n/a" and provide a short explanation.

Upload your completed checklist as an extra file when you submit to a journal.

In your methods section, say that you used the SRQR reporting guidelines, and cite them as:

O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. Standards for reporting qualitative research: a synthesis of recommendations. Acad Med. 2014;89(9):1245-1251.

	Reporting Item	Page Number
#1	Concise description of the nature and topic of the study identifying the study as qualitative or indicating the approach (e.g. ethnography, grounded theory) or data collection methods (e.g. interview, focus group) is recommended	1
#2	Summary of the key elements of the study using the abstract format of the intended publication; typically	2-3

1			includes background, purpose, methods, results and	
2				
3			conclusions	
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5				
6	Problem formulation	#3	Description and significance of the problem /	5-7
7				
8			phenomenon studied: review of relevant theory and	
9				
10			empirical work; problem statement	
11				
12				
13	Purpose or research	#4	Purpose of the study and specific objectives or	6-7
14	question		questions	
15				
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19	Qualitative approach	#5	Qualitative approach (e.g. ethnography, grounded	6-12
20	and research paradigm		theory, case study, phenomenology, narrative research)	
21			and guiding theory if appropriate; identifying the	
22			research paradigm (e.g. postpositivist, constructivist /	
23			interpretivist) is also recommended; rationale. The	
24			rationale should briefly discuss the justification for	
25			choosing that theory, approach, method or technique	
26			rather than other options available; the assumptions	
27			and limitations implicit in those choices and how those	
28			choices influence study conclusions and transferability.	
29			As appropriate the rationale for several items might be	
30			discussed together.	
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47	Researcher	#6	Researchers' characteristics that may influence the	6-12
48	characteristics and		research, including personal attributes, qualifications /	
49	reflexivity		experience, relationship with participants, assumptions	
50			and / or presuppositions; potential or actual interaction	
51			between researchers' characteristics and the research	
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1		questions, approach, methods, results and / or	
2		transferability	
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6	Context	#7 Setting / site and salient contextual factors; rationale	7
7			
8			
9	Sampling strategy	#8 How and why research participants, documents, or	7
10		events were selected; criteria for deciding when no	
11		further sampling was necessary (e.g. sampling	
12		saturation); rationale	
13			
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19	Ethical issues pertaining	#9 Documentation of approval by an appropriate ethics	37
20	to human subjects	review board and participant consent, or explanation for	
21		lack thereof; other confidentiality and data security	
22		issues	
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29	Data collection methods	#10 Types of data collected; details of data collection	6-12
30		procedures including (as appropriate) start and stop	
31		dates of data collection and analysis, iterative process,	
32		triangulation of sources / methods, and modification of	
33		procedures in response to evolving study findings;	
34		rationale	
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43	Data collection	#11 Description of instruments (e.g. interview guides,	6-12
44	instruments and	questionnaires) and devices (e.g. audio recorders) used	
45	technologies	for data collection; if / how the instruments(s) changed	
46		over the course of the study	
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53	Units of study	#12 Number and relevant characteristics of participants,	14-17
54		documents, or events included in the study; level of	
55		participation (could be reported in results)	
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1	Data processing	#13	Methods for processing data prior to and during	12-13
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4			analysis, including transcription, data entry, data	
5				
6			management and security, verification of data integrity,	
7				
8			data coding, and anonymisation / deidentification of	
9				
10			excerpts	
11				
12				
13	Data analysis	#14	Process by which inferences, themes, etc. were	12-13
14				
15			identified and developed, including the researchers	
16				
17			involved in data analysis; usually references a specific	
18				
19			paradigm or approach; rationale	
20				
21				
22				
23	Techniques to enhance	#15	Techniques to enhance trustworthiness and credibility	12-13
24				
25	trustworthiness		of data analysis (e.g. member checking, audit trail,	
26				
27			triangulation); rationale	
28				
29				
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31	Syntheses and	#16	Main findings (e.g. interpretations, inferences, and	14-28
32				
33	interpretation		themes); might include development of a theory or	
34				
35			model, or integration with prior research or theory	
36				
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39	Links to empirical data	#17	Evidence (e.g. quotes, field notes, text excerpts,	21-28
40				
41			photographs) to substantiate analytic findings	
42				
43				
44	Intergration with prior	#18	Short summary of main findings; explanation of how	29-32
45				
46	work, implications,		findings and conclusions connect to, support, elaborate	
47				
48	transferability and		on, or challenge conclusions of earlier scholarship;	
49				
50	contribution(s) to the		discussion of scope of application / generalizability;	
51				
52	field		identification of unique contributions(s) to scholarship in	
53				
54			a discipline or field	
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1	Limitations	#19	Trustworthiness and limitations of findings	33
2				
3				
4	Conflicts of interest	#20	Potential sources of influence of perceived influence on	37
5			study conduct and conclusions; how these were	
6			managed	
7				
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12	Funding	#21	Sources of funding and other support; role of funders in	37
13			data collection, interpretation and reporting	
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