

Doctors' and Nurses' Perceptions of Barriers to Conducting Handover in Hospitals in the Czech Republic

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Abstract

Background: Patient care is shared between clinicians, and the effectiveness of their collaboration and information exchange will often determine the safety and quality of care provided. Handover enables clinicians to exchange information about provision of patient care. Handovers are complex, their level of standardisation varies across departments and hospitals and they are influenced by the work environment. If during handover information pertinent to a patient's care is not transferred between clinicians it may lead to adverse events, including death.

Methods: This paper reports a study of doctors' and nurses' perceptions of barriers to conducting handover in hospitals in the Czech Republic. This was an exploratory study using a self-administered questionnaire survey. The questionnaire evaluated clinicians' perceptions of barriers to handover, including individual performance-related, organisational and environmental factors.

Results: The questionnaire was sent to clinicians in two hospitals in the Czech Republic. A total of 181 doctors and 118 nurses returned the questionnaire. They held similar perceptions as to the most common performance-related obstacles to handover: messy, illegible and out-of-date records; and handover between more senior/junior members of staff. Also, social relationships and hierarchy seemed to have a negative impact on handover. The environmental factors negatively influenced handover included: not enough time, poor workforce planning, busy periods in the department, and interruptions.

Conclusions: Handover emerged as a complex process negatively influenced by the work environment and social relationships. Nursing handover emerged as being conducted in a more standardised manner than handover between doctors; however, standardisation did not enhance the quality of information conveyed.

Improvements in handover practices require organisational changes such as a reduction in workload and training for staff in conducting handover.

Keywords: communication, barriers, handover, nurses, doctors, Czech Republic

1. Background

Handover is an important process during which clinicians share information, as well as exchange authority and primary responsibility for patient care [1,2]. The transfer of care requires the handover of information about the nature of the patient's condition and specific requirements for further investigation and treatment [3]. Evaluations of the root causes of adverse events (unintended consequences of treatment on medications) [4] have revealed that current communication practices within hospitals trigger or contribute to more than 70% of adverse events [5]. An evaluation of the causes of adverse events conducted in 28 Australian hospitals revealed that communication errors had led to twice as many preventable deaths as clinical mistakes [6]. The project reported here explores the perceptions of doctors and nurses (collectively clinicians) of barriers to effective

handover in the Czech Republic. Barriers to handover describe any conditions which predispose inadequate handover. Inadequate handovers are those where information essential to the provision of patient care is not transferred between clinicians. The consequences of inadequate handover include missing information, near-miss situations and adverse events.

1.1. Defining Handovers Investigated in this Current Study

The majority of mainstream research on handover in hospital settings has up to now focused on two categories of handover: (a) shift handover "the process of transferring primary authority and responsibility for providing clinical care to a patient from one departing caregiver to one oncoming caregiver" [7]; and (b) a transfer of patient care between clinicians working in different departments in a hospital.

Although this study investigates doctors' and nurses' experiences and perceptions, it focuses on handover between members of the same occupational group. That is, doctors were asked about handover between doctors, and nurses were asked about handover between nurses.

1.2. International Context

A survey by the Agency for Healthcare Research and Quality found that 49% of respondents stated that important patient-care information is 'lost during shift changes' [8] (p.45). A failure to communicate important information during handover will often have a negative influence on care [9,10] for example, in one study 56.9% of handovers where clinicians did not transfer information pertinent to a patient's care resulted in delayed communication with inpatient units or delayed and/or missed therapy [11].

Numerous studies [12,13,14] have been conducted investigating the underlying causes of miscommunication or a lack of communication during handover. A recent systematic review of barriers to attending physicians' handover identified 91 barriers related to 140 handover strategies, that is, methods of enhancing handover [15]. These barriers to handover can be classified into three major categories: the performance of individuals; environmental factors; and system factors. We shall consider these in turn.

i) Individual performance

Individual performance-related barriers include a lack of communication skills [16] and a lack of diligence in completing handover or patient records. Poor records may lead to confusion regarding a patient's clinical condition and appropriate treatment [17], which may impede handover communication.

Experience is another individual performance-related factor which may play an important role in determining handover effectiveness. Doctors at different levels of expertise, work experience of varied length, as well as clinicians in different specialties may have different expectations of which and how much information should be conveyed. During handover, participants may or may not convey sufficient relevant information to enable their handover counterpart to create a mental model of a patient's current condition; for example, less experienced clinicians may convey different information during handover than more experienced clinicians [18]. More experienced clinicians may fail to transfer enough clinical information for less experienced clinicians to understand a patient's case [19].

Hospital work is hierarchical and both formal and informal authority structures influence the handover process. Social relationships between colleagues may have an impact on the handover process [20]; hierarchy and role ambiguity have been found to have a detrimental effect on handover [21,22].

A handover discussion may be associated with exchanges of 'power', that is, the ability to influence others to follow one's decisions. Power has been mainly researched in relation to communication between doctors. This may relate to the fact that hospitals are professional organisations [23] which are dominated, or at least heavily influenced, by medical professionals. However, the exchanges of power have been found to influence

handover between nurses. For instance, in their study on nursing shift handover, Manias and Street [24] identified that the fear and anxiety experienced by junior nurses during handover involving a nurse manager resulted in the junior nurses' withdrawal from handover conversation.

ii) Environmental factors

Another group of factors that have an impact on handover relate to the physical environment in which the process occurs. Environmental obstacles to handover include interruptions, distractions [25], not enough time, high background noise level [26], a lack of a designated space, and a chaotic environment [27,28] arising, for example, from busy periods in the department [29,30]. Environmental barriers are often determined, or at least heavily influenced, by the organisation and system within which handover is conducted.

iii) System factors

System related barriers to handover include a lack of standardisation [31,32] and inadequate technological support [33,34].

To summarize, previous studies provide sufficient evidence to suggest that clinicians encounter barriers to conducting handover; also that handover is influenced by the context within which it occurs.

1.3. The Czech Republic Context

The current hospital environment in the Czech Republic presents challenging conditions under which conducting handover may be compromised. These conditions include a lack of resources, heavy workloads and a significant administrative burden imposed on staff [35]. Heavy workloads and limited resources led to doctors' strike action in 2010, and in 2012 unions were threatening another round of strikes. The relevance of heavy workloads here is that they may lead clinicians to reduce time devoted to non-clinical activities such as handover.

In 1999 the Czech government accepted international standards for healthcare organisations accreditation. This International Accreditation is not mandatory in the Czech Republic; however, many hospitals have applied for accreditation. Meeting the accreditation requirement results in additional administrative burden on clinician practices and it may further limit the amount of time clinicians devote to handover.

To date, there has been no published evaluation of handover practices in the Czech Republic, nor has there been any published document illustrating the barriers to handover. This exploratory study was motivated by a drive to establish reporting systems for adverse events, as well as programmes to improve patient safety.

Outside of the Czech Republic, various methods and strategies such as checklists have been implemented to improve the effectiveness of transferring information during handover [36]. However, not all of these interventions had been preceded by an investigation into vulnerabilities and barriers to conducting handover within the system in which they were implemented [37].

Accordingly, the study was conducted on doctors' and nurses' perceptions of barriers to conducting handover.

2. The Study

2.1. Aim

The aim of this study was to investigate doctors' and nurses' perceptions of barriers to conducting shift handover in a hospital setting in the Czech Republic. In addition, these clinicians were asked about their opinions of what single change would have the biggest impact on the effectiveness of handover.

2.2. Methods

This study employed a descriptive, cross-sectional study design. The reason for selecting this study design was twofold.

First, investigating patient safety might prove sensitive in healthcare organisations where a blame culture prevails. A blame culture is predicated on the assumption that errors are attributable to individuals and is likely to exist in healthcare organisations which are endeavouring to improve patient safety [38]. While clinicians' first hand experiences and perceptions of the process of handover may provide a valuable insight into current practices, clinicians may be reticent about participating in patient safety research. In order to overcome this obstacle we asked clinicians about their perceptions and experiences and what things make it difficult for them to conduct handover. It was hoped that asking individuals about their experiences would enhance their participation in the research and would boost their efforts to improve patient safety.

Second, heavy workloads may prevent clinicians from participating in research if research is time-consuming. To overcome this issue, we divided the study into three phases (observations, a questionnaire survey and semi-structured interviews) and informed clinicians that participation in one phase did not oblige them to participate in other phases of the study. This paper reports the results of the questionnaire survey.

2.3. Survey Instruments

A cross-sectional, self-administered questionnaire survey was used to elicit clinicians' perceptions of key barriers to conducting shift handover. No survey instrument that summarised barriers to handover identified in previous research was identified. Therefore, a survey tool was created by the principal study investigator. The questionnaire items were drawn from research evidence and, additionally, from pilot data collected through conversations with clinicians and by direct observation of handover sessions.

The final version of the survey included sections on: barriers to conducting handover arising from individual performance, environmental and system factors; a free response section enquiring about clinicians' beliefs on what single change would have the biggest impact on improving the effectiveness of shift handover; information about how clinicians learned about conducting handover and whether or not they had undergone any formal training; information on the length of clinicians' experience of working in their current position and the nature of their employment (full time/part time). All survey questions related to two types of handover, shift handover and a transfer of patient care between clinicians working in different departments in a hospital.

To preserve anonymity it was considered inappropriate to request any further demographic information.

The section on barriers to conducting handover examined clinicians' level of agreement with whether or not a factor impedes their ability to conduct handover.

The individual performance-related factors section enquired about the quality of completion of patient records (messiness, illegible handwriting, reports being out-of-date). Furthermore, this section asked about factors related to the clinicians' overall performance during handover and included questions about the impact of using non-standard abbreviations, difficulty in recognising which information is essential for patient care, and inadequate social skills such as: poor communication skills, communication with a more senior/junior member of staff, not listening and interrupting, and informal chats during handover.

The environmental and system factors section included questions pertaining to the impact of interruptions, lack of a designated place, high background noise levels, long working hours, staff shortages, not enough time, busy periods in the department and poor workforce planning.

Levels of agreement regarding potential barriers to handover were recorded on a four-point Likert scale, with responses ranging from "Strongly Agree" to "Strongly Disagree".

2.4. Participants

This exploratory study used a convenience sampling method. The study participants were recruited from inpatient units in two medium-sized hospitals (Site 1 and Site 2) in the Czech Republic. Site 1 is a public hospital with 500 beds and Site 2 is a university hospital with 750 beds (Site 1 and Site 2 respectively). Selected hospitals represented typical public and university hospitals. Initial contact with respondents was facilitated by a clinical director (Site 1) and a quality manager (Site 2), who provided the researcher with a list of doctors and nurses working in selected wards and who enabled introductory meetings between clinicians and the researcher. The data collection took place between April and May 2011.

Participants in the questionnaire survey included all doctors and nurses working in the following units at the two sites: critical care, general surgery, gynaecology, neonatal, nephrology, neurology, orthopaedics, renal, urology and obstetrics and gynaecology. These units were included in this current study as handover was a routine practice for both doctors and nurses. At the time of the study there were approximately 100 doctors and 140 nurses employed on the selected wards at site 1 and 112 doctors and 173 nurses at site 2. There were no exclusion criteria for participation as the intention was to capture a full range of clinicians' perceptions.

2.5. Sample Size Calculation

The target sample was 212 doctors and 313 nurses which represented the total population of clinicians working in selected wards and would enable the calculation of 95% confidence intervals to within a maximum of $\pm 6.7\%$ and $\pm 5.5\%$ respectively.

2.6. Data Collection

Study participants were recruited between April and May 2011. Participants were invited to participate in the study by the clinical director (Site 1), the quality manager (Site 2) and the researcher (Sites 1 & 2). Both a letter and an email were sent to clinicians inviting them to participate in the survey. The invitation letter and the email contained information about the study and how the issue of confidentiality would be dealt with. One week later a research assistant handed out to clinicians an envelope consisting of a covering letter, questionnaire survey and an empty envelope, so clinicians could return the survey anonymously to a designated place in each hospital. To ensure the anonymity of the survey, clinicians were asked to return completed surveys via internal post to a pigeonhole in the porters' lodge. Email reminders were sent one week and two weeks after the initial distribution of the survey.

2.7. Ethical Considerations

Ethical approval for this research was granted from Sheffield Hallam University's (UK) Research Ethics Committee, and Research Governance Permission was granted by the Research and Development departments at the hospitals. The return of the questionnaire survey was taken to imply consent.

2.8. Data Analysis

2.8.1. Statistical Analysis

The statistical analysis was performed using SPSS version 18.0. Descriptive statistics generated by SPSS were used to describe quantitative outcome measures (barriers to conducting shift handover). The Chi-squared test was used to compare responses from: (a) different types of clinicians (doctors and nurses); and (b) less (<15 years) and more (≥ 15 years) experienced clinicians. The Likert scale responses regarding potential barriers to handover were collapsed [39] to a dichotomy: "Strongly Agree/Agree" and "Disagree/Strongly Disagree", to reduce any difference in extreme response bias and simplify analysis.

Fifteen (15) years was chosen as the defined for the length of experience as in the pilot study participants suggested this was a significant milestone in professional experience.

Agreement between respondents' opinions was considered as 'overwhelming' when more than 70% of them "Agreed/Strongly Agreed" than an item was a barrier; while Wilson score intervals (40) were used to estimate the percentages of clinicians "Agreeing/Strongly Agreeing" that a given factor was a barrier to handover.

2.8.2. Analysis of Responses to an Open-ended Question

In total, 40 doctors (D) and 62 nurses (N) provided responses to an open question regarding their views on what single change would have the biggest impact on the effectiveness of handover. Twenty respondents (D=6, N=14) provided comprehensive comments, whereas others provided more limited ones. The analysis of textual responses had two stages. First, (Stage I) the researcher categorised all comments into themes and categories. Short comments often did not require changes into categories but were assigned into themes. Following that,

categories were converted into categorical variables to estimate whether there were any statistically significant correlations between barriers identified in narrative responses and barriers included in the primary questionnaire. Since no statistically significant correlation was identified, a content analysis (Stage II) was employed to identify themes and meanings emerging from the data [41]. The researcher established a threshold for including an item in the main analysis, below which items were excluded. For an item to be included in the main analysis, it had to be identified as a barrier by three or more respondents.

Narrative comment provided insight into the participants' perceptions of the causes of barriers to handover. In addition, textual data were used to validate closed questions included in the questionnaire. Namely, it was assumed that suggested changes to handover practices would address barriers to handover encountered by clinicians. In other words, the validity of the questionnaire was enhanced if changes to handover practices suggested by respondents reflected barriers included in the questionnaire.

2.8.2.1. The validity and reliability of coding and interpreting responses to an open-ended question

Due to the anonymity of the survey, the researcher's interpretation of responses was not verified with the respondents. However, two techniques were employed to assess validity and reliability of data analysis and interpretation of the study findings. An external qualitative researcher validated the process and outcomes of coding and interpretation of textual data. The findings were also discussed with two clinicians, a doctor and a nurse, working in hospitals in the Czech Republic. These clinicians were not a part of the cohort which completed the questionnaire survey.

3. Results

3.1. Participants' Characteristics

In order to profile participants, the survey included demographic questions such as doctors' grade, the length of time working in their current job and the nature of their employment (full-time/part-time). Length of clinicians' work experience ranged from 1 to 42 years (mean 14 years, SD 10.1) for doctors and from 1 to 52 (mean 15 years, SD 10.8) for nurses. All respondents were employed full-time.

A total of 525 questionnaires were distributed to medical staff across the two hospitals. One hundred and eighty-one doctors and one hundred and eighteen nurses completed the questionnaire (response rates are shown in Table 1).

3.2. Missing Data

Missing data were minimal with, at maximum, three missing values for any question in Section 2. Where responses have been dichotomised as "Agree/Strongly Agree" and "Disagree/Strongly Disagree", respondents with a missing value for a given question have been incorporated in the "Disagree/Strongly Disagree" category, so the "Agree/Strongly Agree" category represents the minimum level of agreement.

Table 1. Survey response rate.

| Clinician type | No Q distributed (%) | No Q returned (%) |
|----------------|----------------------|-------------------|
| Doctor | 212 (100) | 181(85.3) |
| Nurses | 313 (100) | 118 (37.6) |
| Total | 525(100) | 299(56.9) |

Twelve respondents preferred not to answer the question relating to their length of experience in their current job; this may be due to the risk of compromising their anonymity. These respondents have been disregarded when comparing more and less experienced clinicians.

3.3. Main Findings

3.3.1. Barriers to Handover Arising from Individual Performance-related Factors

Only 12% of doctors and 47% of nurses had undertaken formal training in how to conduct handover. Remaining respondents had learned 'on the job'. With reference to other individual performance-related factors, we found overwhelming agreement between doctors and nurses as to the most important obstacles to handover: messy

reports; illegible and out-of-date reports; communication between more senior/junior members of staff; and poor communication skills. Messy reports refer to disorganised reports, where information is scattered and illegible reports describe reports that are impossible or difficult to read as they are untidy and not clear. To a lesser extent, doctors and nurses believed that the following were obstacles to handover: interrupting and not listening; informal chats during handover; difficulty in recognising which information is essential for patient care; the provision of irrelevant clinical information during handover; and the use of non-standard abbreviations (Table 2). Doctors were significantly more likely than nurses to agree/strongly agree that messy reports, illegible handwriting and out of date reports were barriers to handover (Table 2). Although less of a significant difference, nurses were more likely than doctors to see communication between different levels of staff as an issue. For other potential barriers, a similar level of agreement was seen between doctors and nurses.

Table 2. Numbers (percentages) of doctors/nurses agreeing/strongly agreeing that an individual performance-related factor is a barrier to conducting shift handover

| Potential Barrier | No. (%) of Doctors n=181 | No. (%) of Nurses n=118 | χ^2 test p-value |
|---|-----------------------------|----------------------------|--------------------------|
| Messy Reports | 177 (97.8) | 81 (68.6) | < 0.001 |
| Illegible handwriting | 175 (96.7) | 84 (71.2) | < 0.001 |
| Out of Date Reports | 173 (95.6) | 67 (56.8) | < 0.001 |
| Communication with more senior/junior members of staff (doctors) | 144 (79.6) | 105 (89.0) | 0.021 |
| Poor Communication Skills | 135 (74.6) | 91 (77.1) | 0.583 |
| Not listening and interrupting | 118 (65.2) | 79 (66.9) | 0.754 |
| Informal chats during handover | 109 (60.2) | 74 (62.7) | 0.753 |
| Irrelevant medical information is provided during handover | 109 (60.2) | 64 (54.2) | 0.280 |
| Difficulty in recognising which information is essential for the patient's care | 107 (59.1) | 72 (61.0) | 0.743 |
| Use of non-standard abbreviations | 95 (52.5) | 61 (51.7) | 0.855 |

Textual responses given by nurses provided an interesting insight into an understanding of the process. Nurses commented that quality of handover between doctors and other doctors, but not between nurses and other nurses, may be inadequate.

There were no significant differences between those with <15 years experience and ≥ 15 years experience with regard to levels of agreement on individual performance-related factors (please see Table 3).

3.3.2. Barriers to Handover Arising from Environmental and System factors

In relation to environmental and system related factors, respondents felt that their ability to conduct handover was impeded by: not enough time; poor workforce planning; busy periods in the department/hospital; and interruptions. In addition, more than half of respondents, "Strongly Agreed" or "Agreed" that long working hours, staff shortages and lack of a designated place for handover communication influence their ability to conduct handover. Doctors were significantly more likely than nurses to regard poor workforce planning and long working hours as barriers to handover. For other environmental factors similar levels of agreement were recorded. Participants' responses are presented in Table 4.

Table 3. Numbers (percentages) of clinicians agreeing/strongly agreeing that an individual performance-related factor is a barrier to conducting shift handover by length of experience

| Potential Barrier | <15 Years experience n=157 | ≥ 15 Years experience n=130 | χ^2 test p-value |
|---|-------------------------------|-------------------------------------|--------------------------|
| Messy Reports | 138 (88.5) | 108 (83.7) | 0.246 |
| Illegible handwriting | 136 (86.6) | 113 (86.9) | 0.941 |
| Out of Date Reports | 129 (82.2) | 101 (78.3) | 0.412 |
| Communication with more senior/junior members of staff (doctors) | 131 (84.0) | 106 (81.5) | 0.586 |
| Poor Communication Skills | 123 (79.4) | 93 (71.5) | 0.125 |
| Not listening and interrupting | 101 (64.3) | 90 (69.2) | 0.381 |
| Informal chats during handover | 96 (61.5) | 83 (63.8) | 0.688 |
| Irrelevant medical information is provided during handover | 90 (57.3) | 76 (58.9) | 0.786 |
| Difficulty in recognising which information is essential for the patient's care | 94 (59.9) | 77 (59.2) | 0.912 |
| Use of non-standard abbreviations | 80 (51.0) | 72 (55.4) | 0.454 |

Table 4. Numbers (percentages) of doctors/nurses agreeing/strongly agreeing that an environmental factor is a barrier to conducting shift handover

| Potential Barrier | No. (%) of Doctors n=181 | No. (%) of Nurses n=118 | χ^2 test p-value |
|---|-----------------------------|----------------------------|--------------------------|
| Not enough time | 148 (81.8) | 96 (81.4) | 0.928 |
| Poor workforce planning | 147 (81.2) | 81 (69.8) | 0.023 |
| Busy periods in the hospital/department | 142 (78.9) | 94 (79.7) | 0.872 |
| Interruptions | 138 (76.2) | 91 (77.8) | 0.759 |
| Long working hours | 130 (71.8) | 60 (50.8) | <0.001 |
| Staff shortages | 120 (66.3) | 66 (56.4) | 0.085 |
| Lack of a designated place for handover communication | 117 (65.0) | 75 (64.1) | 0.874 |

Regarding response to potential environmental barriers included in the questionnaire, those clinicians with less experience (<15 years) were significantly more likely to

agree that not having enough time was a barrier to handover, but only marginally. On other potential barriers, similar levels of agreement were reached (Table 5).

Table 5. Numbers (percentages) of clinicians agreeing/strongly agreeing that an environmental factor is a barrier to conducting shift handover, by length of experience

| Potential Barrier | <15 Years experience n=157 | ≥15 Years experience n=130 | χ^2 test p-value |
|---|-------------------------------|-------------------------------|--------------------------|
| Not enough time | 134 (85.4) | 99 (76.2) | 0.047 |
| Poor workforce planning | 118 (76.1) | 100 (76.9) | 0.875 |
| Busy periods in the hospital/department | 125 (80.1) | 99 (76.2) | 0.417 |
| Interruptions | 118 (75.2) | 101 (78.3) | 0.533 |
| Long working hours | 105 (66.9) | 77 (59.2) | 0.181 |
| Staff shortages | 103 (66.0) | 75 (57.7) | 0.148 |
| Lack of a designated place for handover communication | 101 (64.7) | 85 (65.9) | 0.839 |

3.3.3. Clinicians' Perceptions of What Single Change would Have the Biggest Impact on the Effectiveness of Handover

Textual responses illustrating how handover could be improved varied; some clinicians provided no response, others provided a few words, whereas some provided a detailed description of how barriers should be addressed. In addition to suggesting how the process could be improved, some participants elaborated on obstacles to shift handover and transfer of patient care between clinicians working in different departments in a hospital. The obstacles were categorised into the following themes:

3.3.3.1. Patient Records

Clinicians reported using two kinds of record during handover - paper and electronic. They felt that both had weaknesses. The poor quality of written records was attributed to several factors; principally, the failure of medical staff to keep records completed and up-to-date. One nurse stated: "Nurses provide updated information during shift changes... this is not the case in terms of handover between doctors"; "Some doctors never complete records." Although no explanations of the causes of this obstacle were provided, four nurses stated that junior doctors "do not know how much information they should include". As for nursing handover, the relevance of information provided in the forms appeared to be an issue: "reports tend to be too long and messy", as some nurses tended to elaborate on non-essential items.

Regarding electronic records, respondents revealed that attempts to improve handover had turned out to be largely unsuccessful. While a couple of respondents felt that electronic forms had increased the quality of handover, twenty-seven clinicians felt that the implementation and use of electronic records was ineffective; for example, one nurse participant stated "Electronic records are not great... as soon as they are saved no one makes an effort

to correct or update them"; "we implemented electronic records last year... it has not solved the problems... doctors still do not complete records".

Both doctors and nurses recommended that the implementation of a simpler, structured handover protocol could enhance the process. They stipulated that in order for such a system to be effective, it would have to be applicable to various patients' conditions and varying working practices on different wards.

3.3.3.2. Status Differences

A number of respondents associated insufficient communication during shift change with status differences amongst clinicians involved in handover; for example, respondents mentioned differences between junior and senior doctors' behaviour during handover. Respondents' perceptions seemed to range from views that junior doctors are overconfident and arrogant, to perceptions that they may be afraid to speak up during handover with their supervisors. One doctor remarked: "If they [junior doctors] spoke up when their supervisor is involved in discussion, we would preclude numerous errors..."

Although there were some strong feelings that differences in status had a negative impact on handover, no solutions were suggested.

3.3.3.3. Organisation

The survey respondents felt that workload and staff shortages impede their participation in handover. Both doctors and nurses noted that the amount of documentation they are required to complete is overwhelming. A number of respondents suggested that there should be fewer patients per clinician and, in terms of shift changes, more time for handover communication and that "there should be an overlap period where incoming and outgoing staff work together for 30 minutes". However, they recognised this approach may not be feasible due to organisational constraints.

4. Discussion

4.1. Discussion of the Key Findings

4.1.1. Records Used During Handover

This study has provided valuable insight into clinicians' perceptions of barriers to conducting handover in hospitals in the Czech Republic. Clinicians felt that the most important barrier to handover concerns records used to communicate and transfer information about patient cases. This is illustrated by the fact that clinicians from both groups held similar perceptions as to the inadequate quality of records used, especially in the case of handover between doctors. Participants felt that there were two reasons for inadequate quality of handover records; they were either not completed/updated or completed inadequately. In relation to the completion of records, it was of particular significance that some doctors did not seem to complete them.

While handover between doctors was perceived by nurses as being in general of insufficient quality, some nursing handovers appeared to include excess information. Furthermore, this study revealed that some junior doctors and nurses find it difficult to identify which information is essential to the provision of patient care and should therefore be included.

Overall, satisfactory patient records were not associated with the forms used, but with diligence in completing them and the quality of their content. Significantly, both doctors and nurses felt overwhelmed with the administrative tasks their work requires and the question arises as to whether or not they had enough time to complete handover records in a diligent manner.

Training doctors in handover skills may be the optimal way to encourage them to prioritise the completion of records. As for the quality of record content, some sort of standardization may be needed to further improve the process. Furthermore, junior doctors and nurses may benefit from some form of supervision while completing records used during handover. Finally, clinicians' workload should allow them to spend time preparing and conducting handover.

4.1.2. Standardisation

Handover between nurses emerged as more standardised than handover between doctors but this did not improve the quality of handover content. This indicates that a certain level of standardisation is essential but not sufficient to improve the quality of the process. The uncertainty regarding the extent of formalisation of the process is consistent with a debate in the literature on information systems and safety problems used to facilitate handover. While some authors indicate that an imposed structure such as a technological solution is effective in coordinating work in health care organisations [42]; others [43] state that information sharing requires a balance between formalisation and flexibility as every individual patient case is different. This current study contributes to this debate in that it shifts attention from the perceived necessity to enhance handover through the implementation of technological solutions to the importance of providing supervision and training for staff.

4.1.3. Work Environment and System-related Factors

This present study improved understanding of environmental and system-related obstacles to handover. Doctors and nurses shared a common belief that the limited availability of time, poor workforce planning, busy periods in the department, interruptions and long working hours are significant barriers to their ability to conduct handover effectively. These findings indicate that handover is strongly influenced by the hospital context and reflect the findings of earlier studies [43,44,45,46], about the organisational and contextual factors that negatively influence the process. Overall, both groups of clinicians felt that the working environment and hospital system do not support their efforts to conduct handover.

4.1.4. Social Relationships and Hierarchy

Although this study enhanced knowledge of the impact of social relationships and hierarchy on handover, it is notable that only doctors made comments about social relationships. They felt that some junior doctors did not engage in a conversation and did not raise any concern if handover included their senior colleagues. This negative impact of status gradient on the process of handover is consistent with previous research; for example, Milanovich et al.'s [47] study on airplane cockpit communication identified hierarchy and differences in status as presenting a barrier to communication. In a medical setting, Sexton et al. [48] examined communication behaviour in an operating room and identified that status differences led junior doctors to withdraw or to mimic senior doctors. The exchanges of power for the patient's care are likely to create tensions between handover participants. Indeed, tensions have been found to be inherently imbedded into nursing [49] and medical [50] handovers, reflecting different expectations of handover participants. In relation to hierarchy, the present study has identified its negative impact on handover. No solution has yet been proposed to eliminate the impact of hierarchy on handover, but it might be that a certain level of standardisation would give junior doctors 'the right' and confidence to raise concerns and challenge senior colleagues. Unfortunately, developing and implementing new procedures before making changes to a hospital culture that accepts hierarchy as a norm, is unlikely to facilitate alterations to the behaviour of junior doctors who may need encouragement from their senior colleagues. It is therefore likely that any changes to handover practices would need to be approved by senior doctors. It is recommended that senior doctors receive training to provide constructive feedback and encourage junior doctors in their handover endeavours.

4.2. Limitations of the Study

This study has limitations. *First*, this was an exploratory study and the participants' views may not be representative of a wider population of clinicians working in hospitals in the Czech Republic. *Secondly*, there was a striking difference between doctors' and nurses' response rate and the response rate from nurses was low (37.7%). Similarly, only 40 doctors and 62 nurses provided answers to the open-ended question. Therefore, the results must be interpreted with caution. The low response rate amongst nurses may reflect the fact that nursing handover in Czech

hospitals seems to be more regulated than handover between doctors; thus doctors could have been more motivated than nurses to express their perceptions and experiences of barriers to conducting handover. Furthermore, since accreditation standards had been implemented, nurses seem to be overwhelmed with documentation they are required to complete and they might be reluctant to participate in a study which requires them to complete further records. *Thirdly*, the questionnaire was an explanatory tool used to assess participants' agreement with a wide range of barriers to handover drawn from the literature. Further studies will be required to develop a reliable tool for measuring barriers to handover across multiple sites. *Fourthly*, it was considered impractical and inappropriate to use a stratified sampling approach due to the necessity to ensure anonymity and confidentiality of study participants. *Fifthly*, twelve doctors (6%) did not provide the length of their work experience which may suggest that, although efforts have been made to explain the ethical principles of the research process, respondents did not feel confident that their anonymity would be protected. *Finally*, the findings are susceptible to hindsight bias owing to clinicians expressing their perceptions based on recollected and reconstructed handover events that had taken place in the past.

5. Summary and Conclusions

The present study contributes valuable insight into doctors' and nurses' perceptions of barriers to conducting handover in hospitals in the Czech Republic. Performance-related and environmental factors appear to have the most negative impact on handover:

Firstly, the quality of handover records was viewed by clinicians as being of insufficient quality. Due to either a lack of time, diligence or knowledge as to which information is necessary for the provision of patient care, and therefore should be included, some doctors did not complete handover documentation. This highlights the need for both training for staff in completing handover records and organisational changes such as reducing workload to ensure that clinicians have sufficient time to complete handover.

Secondly, nursing handover emerged as being conducted in a more standardised manner than handover between doctors; however, standardisation did not enhance the quality of information conveyed. This highlights the importance of supervision and training for staff in completing records to ensure patient information of sufficient quality.

Thirdly, social relationships and differences in clinicians' status emerged as having a negative impact on handover. The best ways to eliminate the impact of hierarchy on handover would be to: (a) introduce a certain level of standardisation, which would give junior doctors 'the right' and confidence to raise concerns and challenge senior colleagues; and, (b) to provide training for senior doctors in providing constructive feedback and encouraging the handover performance of their junior colleagues.

Whilst handover is strongly influenced by its context, we found that the work environment did not support

clinicians' endeavours to conduct handover effectively. Not enough time, poor workforce planning, busy periods in the department, and interruptions emerged as the key environmental barriers. The work environment requires therefore changes in working practices to facilitate effective handover.

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7. Author Contributions

KKM, MDW and PA were responsible for the study conception and design. KKM performed the data collection and was responsible for drafting the manuscript. KK, MDW and PA made critical revisions to the paper for important intellectual content. In addition, KK provided statistical expertise.

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