Introduction

The health-care system seeks to improve comprehensive patient care, health outcomes, and cost-effectiveness in a variety of ways. The main method of structuring or planning care processes, which has been widely used in Slovenia, South-Eastern Europe, and the developed world in recent years, is the integrated care pathway, also known as integrated clinical pathway (ICP) [1]. It is still being monitored for many misunderstandings related to the unanimously accepted definition of an ICP and, in particular, the unclear inclusion of “integration” in the clinical pathway [2]; therefore, in this article, we use the word “integration” in brackets whenever it is unclear. The European Pathway Association defines a clinical pathway as “a methodology for shared decision-making and organization of medical care for a specific group of patients over a predetermined period of time” [3].

ICPs, which can be used in the implementation of health-care activities at all levels [4], enable the modernization of healthcare and the coordination of different roles, form a complete, patient-centered, multidisciplinary health-care team and define the sequence of activities, promote individual and team communication, collaboration, networking, and transparency, and reducing the cost of care.

Abstract

BACKGROUND: An integrated clinical pathway (ICP) is a key method for structuring or planning processes of care, enabling the modernization of health-care delivery and coordination of multiple roles, forming a complete, patient-centered multidisciplinary health-care team and establishing the sequence of activities, promoting individual and team communication, collaboration, networking, and transparency, and reducing the cost of care.

AIM: As there is a research gap in the area of communication among members of a multidisciplinary team for the treatment of patients through an ICP; the aim of this study was to determine the impact of communication of a member of a multidisciplinary team on the active participation of an individual in this multidisciplinary team.

METHODS: A cross-sectional study of three ICPs, for chronic kidney disease, stroke, and total hip arthroplasty was conducted in a typical Slovenian general hospital.

RESULTS: The results show that in the analyzed hospital, two of the three clinical pathways are not yet fully integrated.

CONCLUSION: There is a weak influence of staff communication within a multidisciplinary team on an individual’s participation in this multidisciplinary team, indicating the need for various activities to actually implement clinical pathway “integration,” and promote better communication within teams to strengthen participation in multidisciplinary patient care pathways.

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chronic kidney disease, stroke and total hip arthroplasty and how ICPs actually realize “integration” in practice by involve all key players who are absolutely necessary for the comprehensive treatment of the patient in a multidisciplinary team.

The basis of successful ICP implementation is group collaboration and good communication within the team, with the management and patients/relatives [13]. Interprofessional teamwork involving different service providers is an essential component of integrated care [14]. A specialized multidisciplinary team of health professionals specifically trained to work with stroke patients includes a doctor, a nurse, a physiotherapist, an occupational therapist, a speech therapist, a clinical psychologist, and a social worker [15], with communication and understanding of roles statistically contributing to multidisciplinary working stroke team [16]. A multidisciplinary team for total hip arthroplasty includes a surgeon (ideally with an anaesthesiologist), an orthopedic team leader and/or a joint program coordinator, a nurse in the surgical unit, an outpatient nurse in the surgical care unit, a nurse in the post-operative care unit, a member of the quality department, a physiatrist, a primary care provider, the patient, and family members [17]. Clinical pathways for patients with chronic kidney disease optimize their care while enabling better collaboration and communication between GPs and nephrologists, pharmacists, and nurses in the clinical setting [18]. Studies show that relevant health information shared effectively by members of a multidisciplinary team is still not sufficient for successful collaboration in care, as good teamwork requires effective communication and good joint treatment decision-making [19], [20], [21].

Effective communication, which conditions the establishment and maintenance of good relationships within the team [22], is critical to successful participation in a multidisciplinary team, with clear and concise verbal communication being crucial [23]. Poor communication among the members of a multidisciplinary team can lead to poor patient outcomes [24], [25], a threat to patient safety due to missing key information and its misinterpretation, and unclear instructions [26]. Good communication among health-care professionals and patients/relatives is considered an important moderating variable for achieving better health outcomes [27], [28]. Studies in the field of ICPs [13], [22], [29] have shown that for the successful implementation of an ICP the key lies in the active and competent participation of the individual health professional in interprofessional teams, where he or she contributes specialized knowledge and skills to solve complex health challenges, develops team communication strategies in terms of fostering collaboration among team members, sharing relevant information, and coordinating appropriate health decisions. The forms of communication for successful collaboration include addressing, listening, receiving, and sharing information with team members [30]. Since each member of a multidisciplinary team has specialized knowledge and experience that is essential to making informed decisions about patient care, it is critical that team members share relevant information with all team members and find the best ways to share knowledge and information [26]. As no study has yet been conducted on the impact of the way of communication in ICP on participation, the question arises what impact the way of communication of an individual in a multidisciplinary team ICP has on his/her participation in the team.

Studies show that health-care professionals involved in different ICPs are mostly quite satisfied with team communication [13], but physicians are often unaware of the responsibility for participation and communication in a multidisciplinary team when treating patients through an ICP [31]. Clinical communication, defined as a two-way, coordinated and continuous exchange of information between individuals, represents the timely, accurate and appropriate transmission of information about a patient’s medical treatment through multiple channels [32], with direct communication being the key to establishing effective communication among health-care professionals [33]. It has been shown that strategic communication within the team is required [34], team leaders leading group discussions, coordinating information exchange, managing conflict, and making group decisions [22]. Although most existing studies [5], [13], [35] generally find a positive impact of ICPs on team communication, no research has been conducted to determine the impact of an individual’s communication on his/her participation in a multidisciplinary team following a certain ICP.

Due to presented research gaps, the aim of the study was to determine the influence of communication of an individual in a multidisciplinary team on his or her participation in a multidisciplinary team following a certain ICP.

Methods

A cross-sectional study was conducted using a descriptive quantitative method with a survey. Data collection was part of the project “Impact of ICPs on patient outcomes, communication, and cost-effectiveness” funded by the Slovenian Research Agency (No. L7-2631-3824-2020). The research was approved by the National Medical Ethics Committee of the Republic of Slovenia (No. 0120-189/2021/3). At the request of respondents, the questionnaire was distributed in printed form. The completed questionnaires were collected from June 7 to July 15, 2021, in the Nephrology, Neurology and Orthopaedics Departments of the Novo mesto General Hospital. This hospital was selected because it represents a typical general hospital in Slovenia, one of the ten.
Research population

The research population consisted of hospital employees, according to their roles: Doctor, nurse, physiotherapist, clinical pharmacist, social worker, clinical dietician, radiologist, health administrator, and hygienist. The inclusion criterion was participation in a multidisciplinary team involved in patient treatment. Data were collected through a survey; of the 163 included respondents, 144 completed the questionnaire. All respondents were informed of the purpose of the survey.

Table 1: Assessment of individual participation in a multidisciplinary team in patient care

| Arguments                                                                 | Answers          | Never | Rarely | Uncommon | Often | Very often | M    | SD    |
|---------------------------------------------------------------------------|------------------|-------|--------|----------|-------|------------|------|-------|
| As member of the clinical pathway team, I rely on documentation to monitor the patient’s medical condition. |                  |       |        |          |       |            | 4.42 | 0.87  |
| When I make decisions, I ask another competent person on the team for an opinion.                   |                  | 2.3%  | 11.4%  | 26.5%    | 59.8% |            | 4.36 | 0.86  |
| Team members inform each other about changes in the patient’s health.            |                  | 4%    | 11.4%  | 28.0%    | 56.1% |            | 4.70 | 0.58  |
| As part of the clinical pathway, team members exchange opinions on the necessary activities for the patient. |                  | 0.8%  | 9.2%   | 21.4%    | 65.6% |            | 4.48 | 0.84  |
| Team members plan and coordinate work together.                      |                  | 0%    | 5.3%   | 21.2%    | 71.2% |            | 4.61 | 0.70  |
| Team members make important decisions together and solve problems successfully.       |                  | 0%    | 1.5%   | 6.1%     | 22.9% |            | 4.54 | 0.52  |

Data analysis

We used descriptive statistics and multiple linear regression analysis. A value of p < 0.05 determined the limit of the statistical significance. Statistical analysis was performed using SPSS, version 23.0 (SPSS Inc., Chicago, IL, USA).

Results

The questionnaire was translated from the original English version into Slovenian and then back into English in accordance with international scientific guidelines [36]. We compared the translation with the original, harmonized the discrepancies in content, and adapted it to the Slovenian context. The questionnaire was reviewed and commented on by seven healthcare professionals from the clinical setting, after which a pilot study was conducted (n = 50).

Participation in a multidisciplinary team

The results showed that in the treatment of patients after a stroke, the members of the multidisciplinary team using the ICP participated most frequently with a registered nurse where the average value (M) is 4.31 (SD = 0.58), a nurse (M = 4.23; SD = 0.87), and relatives (M = 3.91; SD = 1.27), followed by collaboration with a neurologist (M = 3.62; SD = 1.53), an internist (M = 3.34; SD = 1.4) and an emergency department doctor (M = 3.12; SD = 1.81), less often they cooperated with a radiologist (M = 2.83; SD = 1.77) and an anesthesiologist (M = 2.74; SD = 1.95), even less often with a social worker (M = 2.6; SD = 1.75), a physiotherapist (M = 2.54; SD = 2.07) and a GP (M = 1.54; SD = 1.87), and very little with a nutritionist (M = 1.31; SD = 1.82) and a psychologist (M = 1.03; SD = 1.03). They cooperated least with a clinical pharmacist (M = 0.97; SD = 1.16) and the community service (M = 0.77; SD = 1.02). There was no cooperation
with a speech therapist, occupational therapist and physiatrist in this multidisciplinary team.

Members of the multidisciplinary team using the ICP for total hip arthroplasty worked on average most frequently with a registered nurse (M = 4.63; SD = 1.07), a nurse (M = 4.51; SD = 1.22) and an orthopedist (M = 4.18; SD = 1.27), followed by cooperation with an anesthetists (M = 3.90; SD = 1.72), physiotherapist (M = 3.87; SD = 1.86), relatives (M = 3.49; SD = 1.81), and a radiologist (M = 3.33; SD = 1.71), somewhat less frequently with a social worker (M = 2.40; SD = 1.67), an internist (M = 2.28; SD = 1.34), infectiologist (M = 2.26; SD = 1.34) and an emergency doctor (M = 1.96; SD = 1.5), even less frequently with a dietician (M = 1.70; SD = 1.69), a community service worker (M = 1.54; SD = 1.45) and a GP (M = 1.48; SD = 1.77), and the least often with a psychiatrist (M = 1.28; SD = 1.06), a psychologist (M = 1.17; SD = 1.23), a clinical pharmacist (M = 1.07; SD = 1.17), and a coordinator in a rehabilitation facility (M = 0.83; SD = 1.19). There was no collaboration with a physiatrist in this multidisciplinary team.

The analysis of the involvement of the multidisciplinary team using the ICP for the treatment of chronic kidney disease showed that its members collaborated most frequently with a registered nurse (M = 4.7; SD = 0.87), a nurse (M = 4.68; SD = 0.96), relatives (M = 4.18; SD = 1.25), a nephrologist (M = 4.09; SD = 1.23), and an internist (M = 4.08; SD = 1.31), followed by collaboration with a radiologist (M = 3.43; SD = 1.52), a social worker (M = 3.28; SD = 1.36), an infectiologist (M = 3.23; SD = 1.35), a physiotherapist (M = 3.2; SD = 1.77) and an emergency doctor (M = 3.13; SD = 1.88), less frequently with a dietician (M = 2.52; SD = 1.52) and an anesthesiologist (M = 2.44; SD = 1.43), and even less with a clinical pharmacist (M = 1.72; SD = 1.21), a psychiatrist (M = 1.72; SD = 1.04) and a GP (M = 1.6; SD = 1.71), and the least with the community service (M = 1.43; SD = 1.32) and a psychologist (M = 1.21; SD = 1.24).

The influence of the type of communication on participation in the team

Table 1 shows that the assessment of average cooperation among the members of a multidisciplinary team following the patients using an ICP is relatively high (M = 4.54). Team members are most likely to inform each other about changes in the patient’s health status (M = 4.70), followed by joint planning and coordination of work among the team members (M = 4.61) and joint decision-making and successful problem solving (M = 4.60), and least often asking another competent person on the team for an opinion when making decisions (M = 4.36).

The largest proportion of respondents (65.7%) estimated that communication within a multidisciplinary team using an ICP in the treatment of patients is not limited to formal communication (Table 2). Similarly, most believed that conflictual (80.9%) or passive (81.4%) communication is not prevalent among team members. The survey results showed that 68.6% of all team members were equally involved in team communication.

As showed in Table 3, an individual’s participation in a multidisciplinary team was statistically significantly influenced by team communication or equal participation of all team members in communication (p < 0.000), while formal communication, conflict communication, and passive communication had no statistically significant influence. Overall, 15% of the variance of participation in a multidisciplinary team was explained by communication methods (R² = 0.417; R² = 0.150; p < 0.000).

The influence of individual communication on team participation

Table 4 shows that, on average, respondents agreed most with the statement that they could easily express their opinions among team members (M = 4.09) and least with the statement that team members listened to their opinions (M = 3.96).

Individual communication explained 22.9% of the variance in participation within a multidisciplinary team (R = 0.495; R² = 0.229; p < 0.000). Listening to opinions (ß = 0.299; p < 0.05) and solving communication problems (ß = 0.235) had the greatest influence on team participation, among the independent variables.
Table 4: Assessment of individual communication within a team

| Arguments                                      | Answers                      | M    | SD   |
|------------------------------------------------|------------------------------|------|------|
| I can easily express my opinion among team members. | I don't agree | 43 (31.6%) | 3.96 | 0.52 |
| By communicating in a team, I can easily solve a problem. | I don't agree | 11 (8.1%) | 2.25 | 0.23 |
| Team members listen to my opinion.              | I don't agree | 3 (2.2%) | 0.29 | 0.11 |

Table 5: Influence of individual communication on team participation – multiple regression model

| Variables                                  | B    | SE (B) | t     | p    |
|--------------------------------------------|------|--------|-------|------|
| Expressing opinion                         | -0.044 | 0.531 | -0.061 | 0.934 |
| Listening to opinions                      | 1.168 | 0.518 | 2.527 | 0.026 |
| Resolving communication problems           | 0.899 | 0.475 | 1.925 | 0.063 |

The existing communication within the team is not such as to have a significant impact on team participation, which can be partly explained by the absence of important team members with whom team members could collaborate and partly by passive, distant, deep, and impersonal communication that makes employees indifferent about team participation [36]. Our research has shown that informing other team members of changes in the patient’s health status and joint planning and coordination of work among team members is crucial for the quality of members’ participation in a multidisciplinary team, which has also been found in other studies [11], [13], [21]. The results also show that team members rarely ask for the opinion of another competent person in decision-making, which is an indicator of weak collaboration in general; this may be partly explained by the non-participation of individual key players in a multidisciplinary team.

The results also show that an individual’s communication influences the individual’s participation in a multidisciplinary team, and that it is particularly important to listen to the opinion of an individual team member. According to Dieleman et al. [29], team members listening to another team member’s opinion is a key communication element of the individual’s participation in a multidisciplinary team. In addition to listening, receiving and providing information to team members, it is critical for an individual’s successful participation in a multidisciplinary team that each team member has specific knowledge and experience that is essential to making informed decisions about patient care [26]. It is critical that members of a multidisciplinary team using an ICP share relevant information with all team members and find the best ways to share knowledge and information.

The findings suggest that through various activities, such as quality analysis of the implementation of an ICP and additional training, the hospital should involve all key stakeholders for the actual “integration” of a CP and promote better communication and strengthen collaboration within multidisciplinary teams.

Despite the fact that this is the first study to determine the impact of staff communication in a multidisciplinary team on an individual’s participation in a multidisciplinary team using an ICP, this study also has some limitations. The biggest one is that we conducted the research in one Slovenian hospital only. Although it is a typical Slovenian general hospital, we cannot generalize the results to all general hospitals in Slovenia and beyond. The results can only give us an insight into the challenges of implementing ICPs in Slovenia and in comparable countries. Another
important limitation relates to the situation related to the COVID-19 epidemic, due to which work, communication and collaboration took place in a different way than before the epidemic.

**Conclusion**

A key element of an ICP is “integration” reflected in the inclusion of all key stakeholders in the multidisciplinary team using this approach. Two of the three ICPs - treatment of a patient with stroke and total hip arthroplasty - have not yet achieved full integration in the hospital analyzed.

There is a weak influence of staff communication within a multidisciplinary team on an individual’s participation in a multidisciplinary team using an ICP, indicating the need for different activities to actually “integrate” ICPs, and to promote better communication within teams to strengthen participation in multidisciplinary teams.

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