# Effectiveness of Patient Handovers Performed By Nurses

## Patient Handovers Performed by Nurses

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***Abstract*— Background:** The importance of patient handover is escalating as a process of transferring patient care from one caregiver to another so that nursing care can be safe and good quality.

**Aims:** The aim of this paper is to evaluate the effectiveness of patient handovers performed by nurses at a university hospital.

**Methods:** The study was conducted using quantitative data. Nurses who refused to participate in the study (annual leave, maternity leave, etc.) and were not in the clinic on the day of data collection were excluded. 146 nurses were included in the study. The data were collected using the "Handover Evaluation Scale" and an observation form prepared by the researchers.

**Results:** Among the nurses, 63% stated that they did not receive any training on patient handover. The mean scores for their patient handovers were 59.27 ± 13.38. Also, all of the handovers were performed verbally, 93.3% of handovers were interrupted and these interruptions were caused by colleagues.

**Conclusion:** The Handover Evaluation Scale and analyses of some demographics of nurses showed that the opinions of female nurses were more positive than those of the male nurses. Standardized patient handover protocols should be developed in order to minimize medical errors caused by poor information exchange during handovers performed by nurses and to improve patient safety.

**Keywords**— Handover, nursing, nurse handover, patient, patient handover.

## I. INTRODUCTION

Patient handover is of utmost importance for safe and quality nursing care because it is a process in which information on patient care is exchanged between nurses (1). As a critical nursing practice, patient handover occurs in verbal, written or taped forms in terms of communication methods; its location can be bedside, staff room or nursing desk; and it is often performed during morning, noon and evening shift changes (1-4).

Patient handover is an indispensable component of patient care and it is aimed at exchanging brief and up-to-date information about a patient's experience, increasing the validity/accuracy of clinical data, avoiding repeated practices, ensuring the applicability of information submitted during the handover process, and discussing the necessary practices to provide a holistic care service (1,5,6). However, patient handover is often limited to exchanging merely brief information about a patient such as his or her name, age, diagnosis, vital signs and other events faced by that patient during a shift. Moreover, the time allocated to nursing care plans during a patient handover does not exceed 1% and, therefore, no essential updates can be made in patient care plans. Furthermore, nurses often consider patient handover as a waste of time (4). Nevertheless, patient safety and quality of care can only be ensured through proper patient handover.

The literature on how a successful handover can be performed is unfortunately limited due to this various handover structures have emerged which hasn't been proven effective to nursing practices (1,5,7). Similarly, in Turkey, there are currently no standards/procedures on how to perform an effective patient handover.

According to the Regulations on the Amendment to the Nursing Regulations published by the Turkish Ministry of Health on April 19, 2011, nurses must submit nursing records related to patient care and treatment practices/observations to charge nurses/teams in written and verbal forms during shift changes. Unfortunately, despite this general approach at national level to patient handovers, there are currently no standards for how this process should be managed. Ineffective patient handovers are known to cause many medical errors such as disruptions in care, medication errors, wrong-site surgeries or even patient deaths (8). In the light of these facts, the aim of this study is to assess the effectiveness of patient handovers performed by nurses at a university hospital.

## II. MATERIAL-METHOD

### *a.Research design*

The study was conducted between Agust 2016-March 2017 using quantitative data.

### *b. Population and sample*

All the nurses working in the hospital (*N*=200) were targeted to reach, but nurses who refused to participate in the study (annual leave, maternity leave, etc.) and were not in the clinic on the day of data collection were excluded. Totally 146 nurses were participated in the study.

### *c. Data collection tools*

The data were collected using the Handover Evaluation Scale and an observation form prepared by the researchers in accordance with the SBAR

technique to help with non-participant observation. SBAR is a standardized communication method used for exchanging information about patients promptly and properly. SBAR stands for Situation, Background, Assessment, and Recommendation.

**(S) Situation:** Current state of the patient (e.g., age, sex, diagnosis, complaints, vital signs, whether the patient's condition is stable or not, treatment plan, the patient's wishes and needs, etc.).

**(B) Background:** Clinical background or cause of admission (e.g., reasons for hospital admission, medical history, tests performed, allergy status, etc.).

**(A) Assessment:** Opinions on the problem/causes of the problem (e.g., assessment of treatment of the patient and the response of the patient to the treatment, assessment of the risks).

**(R) Recommendation:** Possible recommendations of healthcare professionals (9).

The non-participant observations were conducted by two researchers simultaneously and a total of 15 patient handovers were observed in this study.

The Handover Evaluation Scale consists of 17 items, and three (3) of these items are optional. Developed by O'Connell, Ockerby and Hawkins (2013), the self-report scale is a valid and reliable measure of handover process (10). In their study on the validity and reliability of the Turkish version of the scale, Demiray, Keçeci, Açıl and İlaslan (2018) found the CVI value of the scale as .92. Also, the reliability tests found the Cronbach alpha coefficient as .93. Although there were four sub-scales in the original scale, the validity and reliability analyses resulted in a scale with a single sub-scale (11).

***d. Data analysis***

Analyses were performed using descriptive statistics and t-test, Mann Whitney-U test, Kruskall-Wallis test, ANOVA and Kappa test for inter-observer agreement.

***e. Ethical considerations***

Before starting the data collection process, a written permission has been obtained from Düzce University Clinical Research Ethics Board and Düzce University Practice and Research Center (Approval number: 2016/72). Participation in the study was voluntary and the nurses in this study gave *their verbal consents to participate in the study.*

***f. Research limitations***

Since the data of our study were obtained only from the nurses working in Düzce University Practice and Research Center, the results of this study are limited to the opinions and observations of the nurses working in the Düzce University Practice and Research Center.

## III. RESULTS

The findings of the study are presented below, with some descriptive statistics and analyses for patient handovers.

**Table 1.** Some descriptive statistics (n=146)

As can be seen in Table 1, 53.4% (n=78) of the nurses were 30-39 years old, 81.5% (n=119) were women, 64.4% (n=94) had a bachelor's degree, 32.9% (n=48) completed an employment period of 6-10 years, 63% (n=92) did not receive any training on patient handover. The nurses' mean scores on the Handover Evaluation Scale was 59.27 ± 13.38.

According to the observations of the patient handovers, handovers during the 08-16 shift were evaluated mainly, the charge nurses did not participate in 53.32% (n=8) of handovers, all of the handovers were performed verbally, 46.7% (n=7) of the handovers were performed in service corridors, 93.3% (n=14) of handovers were interrupted and these interruptions were caused by colleagues, and the handovers were performed in quiet, crowded or noisy environments. The average duration of handovers was 15.47 ± 6.40 minutes (Table 2).

**Table 2.** Some descriptive features of patient handovers (n=15)

Analyses on the Handover Evaluation Scale and some demographic characteristics of the nurses showed that sex of the nurses had an influence on their perceptions of patient handover process and, in fact, the opinions of female nurses about handover process were more positive than those of the male nurses. (ZMU=-3.153, p=0.002). On the other hand, the nurses' ages, level of education, duration of employment and receiving training on handover were not effective on their perceptions of patient handover process (p> .05).

**Table 3.** Evaluation of perceptions of patient handover according to some demographics variables (n=146)

The results obtained from the analyses on the observations performed in accordance with the SBAR technique for patient handovers are presented below.

**Situation**

For the situation sub-scale, the patient's name, bed number, level of education, reason for hospitalization, vital signs, treatment plan, daily living activities such as nutrition and excretion, observation of fluid intake or output, invasive interventions and dates of invasive interventions were mostly specified. However, the information that was exchanged less frequently or was not exchanged at all included the patient's age; mental status; duration of hospital stay; current status; complaints; risk for falls or pressure sore; pain level; infectious disease status; daily living activities such as respiration, individual hygiene, sleeping habits, need for physical activity and communication; presence of pressure sores, dressings for pressure sores and other dressings, and supportive treatments. It was also determined that there was inter-observer agreement in terms of age, infectious disease, daily living activities such as nutrition and excretion, physical activity, observation of fluid intake or output, invasive interventions, presence of pressure sore, dressings for pressure sores and other dressings (p <.05).

**Background**

For the background sub-scale, information on previous operations, chronic diseases, tests

performed/scheduled to be performed, allergy status, drugs used continuously and laboratory results was found to be exchanged more frequently than information on patient training. In addition, there was inter-observer agreement in terms of exchanging information on allergy status and tests performed/to be performed ($p<.05$).

**Assessment**

For the assessment sub-scale, information on the patient's response to care/treatment, unexpected problems about the patient, date of planned discharge/transfer, documents required for discharge and discharge training was found to be covered more in the handover processes than other areas in this study. There was inter-observer agreement in terms of exchanging information on the response of the patient to care/treatment and the date of planned discharge/transfer ($p<.05$).

**Recommendation**

The nurses often shared their recommendations/ideas about the patient's status during the handovers observed, and there was inter-observer agreement in terms of this factor ($p<.05$). The vast majority of these proposals dealt with topics skipped in the treatment plan.

**Table 4**. SBAR evaluation of patient handovers (n=15)

## IV. DISCUSSION

The results of this study concern certain aspects of the effectiveness of patient handovers performed by nurses. According to the results, the vast majority of the nurses stated that they previously received training on patient handover (63%). Mukhopadhyay, Leong, Lua et al. (12) found that the nurses in their study received training on patient handover more than physicians did. The results about the structure and implementation of the patient handover process showed that the charge nurses did not participate in more than half of the handovers (53.3%). However, there are contrary results from different related studies. O'Connell et al. (3), for example, found that the charge nurses in their study participated in most of the patient handovers performed in the morning and evening. On the other hand, another related study conducted by O'Connell, Ockerby, & Hawkins (10) showed that more than half of the charge nurses did not participate in the handovers. In this sense, the result from our study is similar to the result from the latter study. While there are currently no literature findings on the reasons for not participating in patient handovers, this result from our study could be due to the workload arising from the managerial tasks and responsibilities of the charge nurses.

In this study, 75% of the nursing students were present in the patient handovers. In addition to ensuring continuity of care, patient handovers also provide important opportunities for the training of nursing students (13). However, Kerr (2) argued that nursing students are not likely to ask questions during patient handovers because they are not professional members of this occupation and that training in patient handovers is a rare phenomenon. Nevertheless, patient handover process offers an important learning opportunity for nursing students, who do not normally receive training on patient handover at undergraduate level.

In terms of the method of patient handovers in this study, all of the handovers were performed verbally and in service corridors mostly (%46.7). There are similar findings in the literature suggesting that patient handovers are usually performed verbally (3, 9,12). On the other hand, in some other related studies, patient handovers were found to occur in a room assigned for handovers or at patient bedside (3,9) This difference among the literature findings could be caused by the physical environment conditions where those studies were conducted.

In this study, 14 out of 15 patient handovers were interrupted and the most frequent cause of interruption was colleagues (%73.3). In some other related studies, nearly half of handovers were interrupted and they were usually interrupted by phone calls, patients' relatives or colleagues (14). Interruptions of patient handovers prolong handover duration and may result in incomplete patient information (15). Out of the 15 handovers observed in our study, three handovers provided incomplete information about treatment plan and patient care. In fact, this result highlights a lack of standardized patient handover protocols and the significance of these protocols (15). Welsh, Flanagan, & Ebright (16) emphasized those standard protocols for the specific features of units should be used in exchanging patient information. There is currently an effort in Turkey, to develop standardized patient handover protocols in this direction (9). Standard patient handover protocols are believed to improve the handover process and quality of care as a part of nursing practices (7,17,18).

A patient handover process usually lasts 15-30 minutes when performed using a standard patient handover form (19). In this study, the patient handovers were completed in 15.47 minutes on average. In some other related studies, on the other hand, the average duration of patient handovers was 30 minutes and above (3,4,17). Although the average duration in our study did not exceed the range of time specified in the relevant literature, the lack of protocols could have prolonged this duration and reduced the effectiveness of patient handover process (20).

As shown by the results in some other related studies, all the handovers in this study included exchange of information about the patient's basic personal data (e.g., name, level of education, etc.), reason for hospitalization and treatment plan (3,4,6). On the other hand, in our study, information about risks for falls and pressure sores, which are normally important factors for patient safety, was not exchanged during the patient handovers. Despite varying levels of the risks for falls and pressure sores in different branches of medical practice in Turkey, the risks levels are often high in all areas (21,22). The lack of indication of risks during the handovers observed in this study could be due to the fact that these risks were evaluated using

several scales and stated in patient files, patient handovers were often performed through observation forms for nurses and risks were shown at bedside with various symbols. Nevertheless, there is still need for further research on the lack of indication of risks.

In addition, most of the handovers observed in this study (93.3%) did not include any information on the patient's individual hygiene, which a basic patient requirement, sleep habits, pain level and training need. However, the results about communication were above the average. Graan, Botti, Wood, & Redley (23) similarly found that the patients' levels of pain and comfort were questioned in only three out of 20 handovers observed. This result in our study could be due to the fact that the patient handovers were often performed in service corridors rather than at the patient bedside and, therefore, the patient could not be involved in the handover process and observed directly during the process. Also, this result could be attributed to the fact that pain has been acknowledged as a vital sign in recent years, levels of pain and comfort are not yet seen as a basic need, and nurses view pain as a subjective symptom that is difficult to evaluate appropriately (24,25).

In this study, the nurses mostly made recommendations about treatment plans during the patient handovers (90%). This result could be caused by the nurses' preference for medical models based on treatment practices that do not usually involve care over nursing models (26). In a related study by Kerr (2), however, changes in the status of patients with critical diseases were exchanged during patient handovers. Patient handover practices are rare times for nurses to come together as professionals, exchange information about the patients they care and provide each other with emotional support. An effective nurse handover plays a critical role both for the quality of patient care and patient safety as well as for nurses to gain professional experience and autonomy and receive emotional support. Therefore, it is vital to create an atmosphere of mutual exchange of ideas and effective communication as much as exchanging information about treatment plans.

The mean score received by the nurses in our study on the Handover Evaluation Scale was 59.27, which was above the average. Despite the significant difference among the nurses' scores on the Handover Evaluation Scale with respect to gender, there were not any significant differences among the nurses' scores in terms of age, level of education, duration of professional employment and receiving training on patient delivery.

The female nurses in our study perceived handovers in a more positive way than the male nurses. This result could be due to the different social and gender role expectations for women and men in Turkey. It is often the case that women are expected to be easy going, polite, sensitive, happy, altruist, dependent and so on while men are expected to be unemotional, realist, competitive, reasonable, leader and so on (27). The higher scores received by the female nurses in our study seem to be consistent with traditional gender roles and expectations. On the other hand, in their study based on the SBAR method, Nagammal, Nashwan, Nair, & Susmitha (29) found no significant difference between nurses' views on patient handover and gender. Therefore, we could suggest that cultural background is influential on the success patient handover in terms of developing perceptions of handover process.

In this study, the lack of any significant difference between the scores for receiving training on patient handover and level of education could be attributed to the fact that nursing students do not usually receive any training on handover processes during their undergraduate education and, therefore, they get to learn about handover process from professional nurses in the hospital environment and by observing them (30,31). Research showed that, in nursing care and practices, nursing students tend to take clinical nurses as models more than faculty members (32,33). Therefore, we could suggest that any patient handover process is shaped to fit a department's existing workplace culture. On the other hand, undesired behaviors can also be obtained through modeling (34, 35). This result is regarded as a finding that it is extremely important to make patient handovers in accordance with particular models/protocols for the sake of patient safety and quality of care.

## V. CONCLUSION

The results of this study showed that the charge nurses did not participate in more than half of the patient handovers, the handovers occurred verbally in service corridors and the handovers were interrupted mostly by problems caused by colleagues. According to the results our observations conducted according to the SBAR technique, the handover practices mainly included exchange of information about the general state of the patient such as level of education, treatment plan, reason for and duration of hospitalization, vital signs, daily living activities such as nutrition and excretion; and invasive interventions. However, information that is directly related patient care such as pressure sore, pain level and risk for falls were not adequately exchanged. Information about the patient's background such as chronic diseases, operations and tests was exchanged during the handovers, but information about planned or previous patient training was not. In terms of assessment, opinions about the patient's response to treatment and care and about additional problems were usually shared, but thoughts about date of discharge, discharge training or the patient's participation in handover process were not shared. Finally, in terms of recommendation for handover, the nurses made recommendations about treatment plans and solution of the problems concerning the patient's relatives, but they did not return to the skipped information following handover.

## ACKNOWLEDGMENT

The researchers would like to acknowledge the nurses participated in the study for their support.

**Conflict of interest**

The authors have declared no conflict of interest.

**Funding statement**

None declared.

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**Table 1. Some Descriptive Statistics (n=146)**

| Variables | n | % |
|---|---|---|
| **Age** | | |
| 18-29 | 62 | 42.5 |
| 30-39 | 78 | **53.4** |
| 40-49 | 6 | 4.1 |
| **Sex** | | |
| Female | 119 | **81.5** |
| Male | 27 | 18.5 |
| **Level of Education** | | |
| Associate Degree | 3 | 2.1 |
| High-school Diploma | 34 | 23.3 |
| Bachelor's Degree | 94 | **64.4** |
| Master's Degree | 15 | 10.3 |
| **Duration of Employment** | | |
| 1-5 | 47 | 32.2 |
| 6-10 | 48 | **32.9** |
| 11-15 | 33 | 22.6 |
| 16-20 | 18 | 12.3 |
| **Mean Scores on the Handover Evaluation Scale** | | |
| **X±SD** | **Minimum** | **Maximum** |
| 59.27 ±13.38 | 14.00 | 77.00 |

**Table 2. Some descriptive features of patient handovers (n=15)**

| | The Shift Evaluated | n | % |
|---|---|---|---|
| **GENERAL INFORMATION** | 08-16 | 8 | 53.3 |
| | 16-08 | 7 | 46.7 |
| | **Presence of the Charge Nurse** | | |
| | Yes | 7 | 46.7 |
| | No | 8 | 53.3 |
| | **Method** | | |
| | Verbal | 15 | 100 |
| | **Place of the Handover** | | |
| | Bedside | 5 | 33.3 |
| | Patient Corridor | 7 | 46.7 |
| | Nurse Desk | 1 | 6.7 |
| | Treatment Room | 2 | 13.3 |
| | **Interruption** | | |
| | Yes | 14 | 93.3 |
| | No | 1 | 6.7 |
| | **Causes of Interruption*** | | |
| | Phone Call | 1 | 6.7 |
| | Staff | 7 | 46.7 |
| | Other Patients | 2 | 13.3 |
| | Factors Caused by Colleagues | 11 | 73.3 |
| | **Description of the Place of Handover** | | |
| | Quiet | 5 | 33.3 |
| | Noisy | 5 | 33.3 |
| | Crowded | 5 | 33.3 |
| | **Duration of Handover** | 15.47 ± 6.40 minutes | |

**Table 3. Evaluation of Perceptions of Patient Handover According to Some Socio-Economic Variables (n=146)**

| Some Socio-Economic Variables | n | X±SD | |
|---|---|---|---|
| **Sex** | | | |
| Female | 119 | 61.09 ±11.61 | $Z_{MU}$ = -3.153 |
| Male | 27 | 51.22 ± 17.42 | **p= 0.002** |
| **Age** | | | |
| 18-29 | 62 | 57.37 ± 14.39 | $X_{KW}$ = 2.366 |
| 30-39 | 78 | 61.32 ± 11.40 | p= 0.306 |
| 40-49 | 6 | 52.17 ± 22.12 | |
| **Level of Education** | | | |
| High-school Diploma | 34 | 55.97±16.62 | |
| Bachelor's Degree | 94 | 60.37 ±12.46 | $X_{KW}$ = 2.561 |
| Master's Degree | 15 | 58.47 ±10.75 | p= 0.464 |
| Associate Degree | 3 | 66.00 ± 8.00 | |
| **Duration of Employment** | | | |
| 1-5 | 47 | 56.51 ± 15.37 | F= 1.668 |
| 6-10 | 48 | 58.63 ± 11.67 | p= 0.177 |
| 11-15 | 33 | 62.55 ± 13.29 | |
| 16-20 | 18 | 62.17 ± 11.22 | |
| **Receiving Any Training on Patient Handover** | | | |
| Yes | 92 | 59.36 ± 13.47 | t=0.108 |
| No | 54 | 59.11 ±13.34 | p=0.914 |

**Table 4. SBAR Evaluation of Patient Handovers (n=15)**

| SBAR | The Patient's | Specified | | Non-Specified | | IO Agreement |
|---|---|---|---|---|---|---|
| | | n | % | n | % | |
| SITUATION | Name | 15 | 100 | 0 | 0 | --- |
| | Age | 7 | 46.7 | 8 | 53.3 | **K: .602 p : .019** |
| | Bed Number | 10 | 66.7 | 5 | 33.3 | --- |
| | Level of Education | 15 | 100 | 0 | 0 | --- |
| | Mental Status | 1 | 6.7 | 14 | 93.3 | --- |
| | Reason for Hospitalization | 15 | 100 | 0 | 0 | --- |
| | Duration of Hospital Stay | 4 | 26.7 | 11 | 73.3 | --- |
| | Current Status | 6 | 40 | 9 | 60 | --- |
| | Complaints | 6 | 40 | 9 | 60 | --- |
| | Risk for Falls | 0 | 0 | 15 | 100 | --- |
| | Risk for Pressure Sore | 0 | 0 | 15 | 100 | --- |
| | Pain Level | 1 | 6.7 | 14 | 93.3 | --- |
| | Infectious Disease Status | 6 | 40 | 9 | 60 | **K: .706 p: .004** |
| | Vital Signs | 12 | 80 | 3 | 20 | --- |
| | Treatment Plan | 15 | 100 | 0 | 0 | --- |
| | Daily Living Activities | | | | | |
| | • *Nutrition* | 11 | 73.3 | 4 | 26.7 | **K: .815 p: ,001** |
| | • *Excretion* | 9 | 60 | 6 | 40 | **K: .706 p: .004** |
| | • *Respiration* | 4 | 26.7 | 11 | 73.3 | --- |
| | • *Individual Hygiene* | 0 | 0 | 15 | 100 | --- |
| | • *Sleeping Habits* | 1 | 6.7 | 14 | 93.3 | --- |
| | • *Need for Physical Activity* | 5 | 33.3 | 10 | 66.7 | **K: 1.000 p: .000** |
| | • *Communication* | 2 | 13.3 | 13 | 66.7 | --- |
| | Observation of Fluid Intake/Output | 11 | 73.3 | 4 | 26.7 | **K: .815 p: .001** |
| | Invasive Interventions | 11 | 73.3 | 4 | 26.7 | **K: .595 p: .012** |
| | Dates of Invasive Interventions | 8 | 53.3 | 7 | 46.7 | --- |
| | Presence of Pressure Sores | 4 | 26.7 | 11 | 73.3 | **K: .595 p: .012** |
| | Dressings for Pressure Sores and Other Dressings | 3 | 20 | 12 | 80 | **K: .762 p: .002** |
| | Supportive Treatments | 1 | 6.7 | 14 | 93.3 | --- |
| BACKGROUND | Allergy status | 6 | 40 | 9 | 60 | **K: .737 p: .003** |
| | Chronic Diseases | 9 | 60 | 6 | 40 | --- |
| | Previous Operations | 11 | 73.3 | 4 | 26.7 | --- |
| | Drugs Used Continuously | 6 | 40 | 9 | 60 | --- |
| | Laboratory Results | 7 | 46.7 | 8 | 53.3 | --- |
| | Tests Performed/To Be Performed | 8 | 53.3 | 7 | 46.7 | **K: .444 p: .038** |
| | Planned/Offered Training | 1 | 6.7 | 14 | 93.3 | --- |
| ASSESSMENT | Response of the Patient to Care/Treatment | 13 | 86.7 | 2 | 13.3 | **K: .595 p: .012** |
| | Unexpected Problems About the Patient | 11 | 73.3 | 4 | 26.7 | --- |
| | Date of Planned Discharge/Transfer | 4 | 26.7 | 11 | 73.3 | **K: .706 p: .004** |
| | Documents/Signatures Required for Discharge | 0 | 0 | 15 | 100 | --- |
| | Discharge training | 0 | 0 | 15 | 100 | --- |
| | Patient Participation in Handover | 5 | 33.3 | 10 | 66.7 | --- |
| RECOMMENDATION | Sharing Recommendations/Ideas About the Patient's Status | 10 | 66.7 | 5 | 33.3 | **K: .727 p: .003** |
| | • *Treatment Plan* | 9 | 90 | -- | -- | --- |
| | • *Problems About the Patient's Relatives* | 1 | 10 | -- | -- | --- |
| POST-HANDOVER | Completing Missing/Skipped Information | 3 | 20 | 12 | 80 | **K: .444 p: .038** |
| | • *Treatment Plan* | 1 | 33.3 | -- | -- | --- |
| | • *Missing Information About Care* | 2 | 66.7 | -- | -- | --- |