Patient safety is currently one of the many universal issues in healthcare. The World Health Organization reports that millions of patients worldwide are threatened with injury and even death due to health practice errors [1]. In developed and high-income countries proves that one in 10 patients is injured as a result of a medical error while receiving treatment in a hospital. Medical errors are caused by various types and levels of adverse events with almost 50% preventable, while in low-income countries 134 million adverse events occur annually due to errors in hospitalization in low-income countries resulting in 2.6 million deaths each year with lost productivity of as much as 1.5 trillion dollars per year [2].

The high number of cases of medical errors cannot be separated from the performance of the professionals involved in health services. According to the results of the 2019 KNKPRS report, the number of patient safety incident reports of 11.23 percent occurred in the nursing unit, 6.17% in the pharmacy unit, and 4.12 percent by doctors [3]. The main cause of medical errors is the low performance of nurses. The higher the performance of nurses, the number of medical errors such as adverse events can be reduced [4].

The low performance of nurses can be influenced by several factors, such as individual characteristics, intrinsic and extrinsic motivation. The characteristics of nurses can be seen from age, gender, education level, marital status, and years of service that can affect performance [5]. Nurses are the most numerous staff in a health service. The success or failure of the organization depends on the performance of nurses or vice versa [6]. Nurses interact with patients more often so the quality of nurses must be improved to reduce the occurrence of adverse events [7].

Motivation has a very strong bond in increasing the performance of nurses in a hospital. Research conducted by Agustin [8] states that there is a motivational bond with the performance of nurses in practicing patient safety. Research by Gunawan et al. [9] stated that the work motivation of nurses was
in a low category, which was 64.29%. The same study was conducted by Abu Yahya et al. [10] who showed that the work motivation of nurses was also low at around 60.1%.

Observation of individual characteristics, intrinsic and extrinsic motivation, as well as the performance of nurses in carrying out patient safety, is a concern for professionals because they are parameters of success in providing nursing care. The success of nursing care can not only improve patient recovery but also the quality of service and the image of the hospital.

**Methods**

**Research design**

The research design used is a descriptive correlation. This design aims to determine the relationship of individual characteristics, intrinsic and extrinsic motivation to the performance of nurses.

**Sample**

The research sample consisted of 175 nurses with simple random sampling.

The sample size in this study amounted to 175 people. Sampling in this study was carried out in two stages, namely:

1. The first stage is using cluster sampling technique, namely, grouping the samples based on the total population, the number is 311 and the sample selection is based on the proportion, the number is 175 (Table 1)
2. The second stage is the selection of sample members by probability sampling; simple random sampling where the researcher made a lottery based on the serial number of the nurse in absenteeism
3. Subjects were sampled because they happened to be found at the same time and place in data collection.

**Instruments**

This study uses several instruments, including individual characteristics questionnaire developed from the theory of individual characteristics Ilyas, 2015. The questionnaire consists of six open-ended questions, namely, age, gender, education level, marital status, and years of service. The performance questionnaire was developed based on the theoretical concept of Gomes. The questionnaire consisted of 21 statements, consisting of 14 positive statement items (1, 2, 4, 6, 8, 9, 10, 12, 14, 15, 16, 18, 20, and 21) and seven negative statements (3, 5, 7, 11, 13, 17, and 19) which were developed based on theoretical concepts.

The determination of score of this questionnaire was measured using the Guttman scale. The measurement scale used in the performance questionnaire consists of two answer choices using Yes and No with provisions for positive statements: (1) Yes and (0) No and for negative statements: (1) No and (0) Yes. The intrinsic motivation questionnaire has a content validity index validity test value of 1 and a Cronbach’s alpha reliability test value of 0.88, the extrinsic motivation questionnaire has a content validity index validity test value of 0.97 and a Cronbach’s alpha reliability test value of 0.81. The performance questionnaire has a validity test value content validity Index 1 and Cronbach’s alpha reliability test value 0.90.

**Data collection**

The study was conducted in June–October 2021 at the Sembiring Hospital. The researcher explains the objectives, benefits, and procedures for conducting the research. Researcher revoked lottery numbers. The number that appears is used as the respondent. If the respondent is willing to become a research respondent, the researcher asks to sign an informed consent letter. Before filling out the questionnaire, the researcher first explained how to fill out the questionnaire to the respondents and reminded respondents to fill out the questionnaire carefully and carefully and there were no unanswered statements, then respondents were allowed to ask questions if there were questions that they did not understand. After the respondent finished filling out the questionnaire, the questionnaire was collected again by the researcher and checked for completeness, if any were incomplete, they were completed right away. Furthermore, the data that have been collected are analyzed.

**Data analysis**

Data analysis was carried out using SPPS. Bivariate data analysis using Chi-square statistical test ($\chi^2$) and multivariate using logistic regression. The significance value was set at $p < 0.05$. Bivariate analysis was conducted to determine the relationship between individual characteristics, intrinsic and extrinsic motivation on performance. The multivariate quantified analysis was the most influential variable to nurse performance. The significance level to enter the logistic regression models was set at $p < 0.25$. The logistic regression models were performed two times.
The three most influential variables were obtained finally.

**Ethical considerations**

This research has been approved by the Health Research Ethics Commission, University of North Sumatra No. 1453/V/SP/2021 and the researcher also asked for the consent of the respondents with informed consent.

**Results**

Based on Table 2, the frequency distribution of individual characteristics is known from the 175 nurses who participated in this study majority-female nurses as much as 158 (95.80%). Majority aged 25–30 years were 91 nurses (55.20%). The majority of nurses graduated from diploma III as much as 98 people (59.40%). Respondents who had a service period of 5 years were 83 people (50.30%) and >5 years were 82 people (49.70%). Nurses have unmarried marital status as many as 121 people (73.70%).

Based on Table 3, data were analyzed by Chi-square. There was a significant relationship (p < 0.05) amongst gender, age, working time, marriage status, responsibility, achievement, work result, self-actualization, work relationship, work procedure, and supervision with nurse performance in conducting patient safety. There was not a significant relationship (p > 0.05) amongst graduates, self-development, salary, work condition, and insurance with nurse performance in conducting patient safety.

Based on Table 4, work time, result, and procedure were the most influencing variable on nurse performance by logistic regression. It showed that the significant variable (p < 0.05) have a relationship with nurse performance in conducting patient safety, work time (p = 0.001), work result (p = 0.001), and work procedure (p = 0.001). If the strength relationship according to the value of odds ratio (OR), so the most influential variable nurse performance in conducting patient safety was work time (OR = 1.73; 95%CI, 0.05 – 5.95), work result (OR = 12.17; 95%CI, 4.20 – 34.57), and work procedure (OR = 24.50; 95%CI, 7.34 – 81.74).

**Discussion**

In this study, the number of female nurses was more than male. This is following data from the Ministry of Health of the Republic of Indonesia that the number of nurses is dominated by women as much as 84% [11]. There is an obstacle for gender differences in developing themselves to increase work productivity between men and women. Women are more skilled, more diligent, and more thorough than men [12]. The results of this study are in accordance by Liou et al., that there was a difference between men and women in terms of providing innovation in nursing care [13].
In this study, the majority of the nurse was ≤30 years old. Nurses ≤30 years old have good performance due to the relatively young age of nurses. At a young age, most people are more energetic. The body’s ability to tolerate the activities carried out is still good. So that they can do all work and activities more easily without experiencing health problems that have an impact on increasing their performance [15].

Working time was one of the most influential variables to nurse performance in conducting patient safety. We found that working time had 1.73 times increase nurse performance. The results were in line with a study conducted inpatient room by Gunawan et al. [9], [16] that working time will affect the capacity and level of performance of nurses. Basically, the longer the nurse’s working period, the more proficient, have better capacity and ability compared to nurses who have fewer years of service. The expertise approach is carried out by continuing to do things repeatedly so that they can increase expertise in providing nursing action interventions compared to nurses who have fewer years of service. The experience gained during the work period makes senior nurses more confident in taking action on patients because they have been trained longer and are agile [16].

Changes in marital status from single to married make nurses more responsible in their work so that they can provide better performance in providing nursing care to patients. In this study, there is a relationship between marital status and nurse performance in conducting patient safety. In line with research by Kementerian Kesehatan Indonesia [11] that there is a relationship between marital status and the innovation ability of nurses in performing nursing care. Nurses who are married, 15 times can innovate in nursing care compared to those who are not married. Married people experience less turnover and are more satisfied with their jobs than unmarried people [17].

Supervision is a routine activity carried out by superiors to ensure the implementation of nursing care runs smoothly according to standards. In this study, supervision has a relationship with the performance of nurses. In line with research conducted by Siradjin et al. [18] that clinical supervision carried out by supervisors has an impact on the clinical ability of nurses in carrying out nursing care. During supervision, discussions are held with experienced superiors to solve problems, increase knowledge, and develop nursing practice [19].

We found that salary did not affect nurse performance in conducting patient safety in Sembiring Hospital. Because this hospital is a private hospital, not government-owned. This finding is quite confusing because it contradicts the theory that salary is a driving force for enthusiasm to work to improve performance [20], [21]. Salary is remuneration provided by the agency to workers [22]. In this study, the majority of nurses working in this hospital were alumni of the deli Husada Deli Tua Health Institute, which is a foundation with the Sembiring Hospital. So that nurses feel they are working in their own homes so they don’t care about the salary they get. The relationship between salary and nurse performance requires further research.

Responsibility affects the performance of nurses. Responsibility is a person’s ability to complete a given job [23]. Nurses have the responsibility to provide

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### Table 3: The influence of individual characteristics on nurse performance (n = 175)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Nurse performance</th>
<th>Total p-value</th>
<th>RR</th>
<th>95% CI for RR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Good</td>
<td>Male</td>
<td>12</td>
<td>42.90</td>
</tr>
<tr>
<td></td>
<td>Good</td>
<td>Female</td>
<td>20</td>
<td>13.60</td>
</tr>
<tr>
<td>Age ≤30 years</td>
<td>Good</td>
<td>32</td>
<td>22.40</td>
<td>111</td>
</tr>
<tr>
<td>Age &gt;30 years</td>
<td>Good</td>
<td>2</td>
<td>6.25</td>
<td>30</td>
</tr>
<tr>
<td>Graduated</td>
<td>Good</td>
<td>6</td>
<td>20.70</td>
<td>23</td>
</tr>
<tr>
<td>Nurse profession</td>
<td>Good</td>
<td>26</td>
<td>17.80</td>
<td>120</td>
</tr>
<tr>
<td>Working time</td>
<td>Good</td>
<td>12</td>
<td>60.00</td>
<td>8</td>
</tr>
<tr>
<td>Marriage status</td>
<td>Good</td>
<td>20</td>
<td>12.90</td>
<td>135</td>
</tr>
<tr>
<td>Married</td>
<td>Good</td>
<td>8</td>
<td>42.10</td>
<td>11</td>
</tr>
<tr>
<td>Motivation intrinsic</td>
<td>Good</td>
<td>24</td>
<td>15.40</td>
<td>132</td>
</tr>
</tbody>
</table>

*Fisher extract test.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Nurse performance</th>
<th>Total p-value</th>
<th>Exp B (OR)</th>
<th>95% CI for Exp B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salary</td>
<td>Enough</td>
<td>5</td>
<td>33.30</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Not enough</td>
<td>27</td>
<td>16.90</td>
<td>133</td>
</tr>
<tr>
<td>Working condition</td>
<td>Good</td>
<td>9</td>
<td>6.50</td>
<td>129</td>
</tr>
<tr>
<td></td>
<td>Worst</td>
<td>23</td>
<td>62.20</td>
<td>14</td>
</tr>
<tr>
<td>Working relationship</td>
<td>Good</td>
<td>27</td>
<td>16.90</td>
<td>133</td>
</tr>
<tr>
<td></td>
<td>Worst</td>
<td>5</td>
<td>33.30</td>
<td>10</td>
</tr>
<tr>
<td>Self-actualization</td>
<td>Good</td>
<td>4</td>
<td>66.70</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Worst</td>
<td>28</td>
<td>16.66</td>
<td>141</td>
</tr>
</tbody>
</table>

* Fisher extract test.

### Table 4: The most influential variable on nurse performance (n = 165)

<table>
<thead>
<tr>
<th>Variable</th>
<th>p-value</th>
<th>Exp B (OR)</th>
<th>95% CI for Exp B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work time</td>
<td>0.00*</td>
<td>1.73</td>
<td>0.05</td>
</tr>
<tr>
<td>Work result</td>
<td>0.00**</td>
<td>12.17</td>
<td>4.20</td>
</tr>
<tr>
<td>Working procedure</td>
<td>0.00</td>
<td>24.50</td>
<td>7.34</td>
</tr>
</tbody>
</table>

* Fisher extract test. **Second model.
comprehensive nursing care to patients regardless of ethnicity, religion, and financial status. Nurses as a profession provide direct action to patients who are guided by nursing standards based on a code of ethics within the scope of authority and responsibility [24].

Achievement affects performance. Nurses who have good achievements will have good nurses' performance. In this study, nurses work according to a specified schedule. The nurse came on time. Leaders reward nurses who come on time and provide good nursing care. Because there will be evaluation results from hospital management as a guide in determining nurses who have achievements. This is in line with research conducted by that good achievement will increase nurses' performance [11].

Work results affect performance. Sembiring Hospital is a private hospital where nurses are required to provide a complete service. So that it shows maximum work results. In this study, work results can increase the performance of nurses 12.17 times. Nurses who have good work results increase performance. Apart from that, this also needs to be supported with responsibility. If nurses do not carry out their responsibilities properly, malpractice will occur and the patient’s life will be lost [25], [26].

Self-development is not related to performance. This is contrary to the theory which says that work will achieve the highest success if a person has the will to continue to learn and develop [25]. Good self-development has the benefits of a long career that helps nurses to progress and develop [27]. The self-development of nurses in this hospital is still lacking. Development is only for continuing further education. However, if the promotion and training are only for certain people the nurse's self-development in this hospital has not been maximized.

Self-actualization affects performance. The leadership at the Sembiring Hospital provides nurses with the opportunity to be creative at work to improve work performance so that performance can increase. This is following McClelland's theory that a person must learn to master skills to achieve high performance [28], [29].

The working relationship influences the performance of nurses. In this study, there was no difference in the employment status of nurses. So that nurses have good working relationships with others. In this case, the Sembiring Hospital is a non-government private hospital that allows it to have civil servants and honorary employees. This study is in line with research conducted by Amarat et al. [30] that there is a relationship between work relationships and nurse performance.

Working conditions have no relationship with performance. This is in line with the research conducted by Cho and Han [28] that there is no significant effect between working conditions with the performance of nurses. This is because nurses are required to provide the best nursing care to patients even though the working environment conditions are not supportive. Good performance can be created by setting a healthy environment [29], [31].

Social security is not related to performance. This is because the Sembiring Hospital is a private hospital that does not provide an old age guarantee to its employees, one of which is a nurse such as a government-owned hospital. This is in line with research conducted by Awan et al. [32] that social security does not affect the performance of employees. Only a part of the nurses of the Sembiring Hospital has social security for workers.

Work procedures are the most influential factors on the performance of nurses. This is following a study conducted by Page-Cutrara and Turk [33]. Working procedures 24.50 times can improve the performance of nurses. Standard operating procedures in hospitals are by the duties and functions of nurses. Nurses also perform nursing care actions by standard operating procedures. This is assessed by the hospital leadership. Hospitals that have clear work procedures can provide optimal services [34], [35].

This study has limitations, namely: This research was conducted by the respondent's superiors. Respondents may be less flexible in filling out the questionnaire given. Besides having limitations, this research also has implications. This finding is very useful for policymakers in the hospital to pay attention to the characteristics and motivation factors both internal and external in making policies to improve the performance of employees, especially nurses.

Conclusions

Nurse performance in conducting patient safety can be influenced by various factors. Improved performance can be controlled by understanding the influencing factors so that performance can increase and can improve the quality of nursing care provided. The hospital leadership must consider the factors of the working period, work results, and work procedures in the hospital. Further research needs to be done on the relationship between education status, self-development, salary, working conditions, and insurance on nurse performance in conducting patient safety.

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Authors Contribution

Alprindo Sembiring Meliala conceived and carried out the research and wrote the manuscript., Ida Yustina, Zulfendi, Setiawan, and Siti Saidah Nasution reviewed the research process, design, and results in the analysis of research.

References


