Schizophrenia is a serious, chronic and debilitating mental illness, which affects 1% of the global population irrespective of patient’s country of origin, sex or cultural group (1-3). It requires long-lasting and comprehensive treatment. Moreover, schizophrenia is among the most stigmatizing disorders and is characterized by episodes of relapses and remissions. Thus it has critical health, economic and social consequences (1-3) related to everyday living and work.

Although the number of working people with schizophrenia varies between countries, usually ranging from 10% to 20%, unemployment is common among them (2, 4, 5). It is mainly due to the severity of symptoms and the recurrent course of this disorder. It also results from the discrimination and the lack of employers willing to employ a patient in the remission stage (3, 4, 6).

In spite of the fact that the patients are generally afraid of looking for a job during remission of schizophrenia (2), work is very often a superior goal for them (7). In addition to this, surveys suggest that the majority of patients with a severe mental disorder want to work (8) and experts believe that more than 50% of patients could work during remission stage (2). Moreover, supported employment (SE) performs a therapeutic function (3, 5) and may lead to the competitive work attainment (5). Apart from that, work is associated with a significantly better quality of life for mentally ill people and contributes to “compliance” and to lower rehospitalization rates, likewise (2, 9, 10). Thus, the improvement of the
Cater the percentage of patients employed and
direct and indirect costs (4, 11, 12).

Considering the economic burden of schizo-
phrenia (11), indirect costs mainly dominated by the
value of lost productivity and generated both by the
patients and their healthy caregivers constitute
approximately 2/3 of total costs of this disorder (11,
13, 14). Furthermore, a huge part of the global finan-
cial impact of mental disorders concerns getting and
keeping a job (11), hence the importance of studies
related to job opportunities among patients with
schizophrenia.

Therefore, this paper investigates opinions of
medical universities students’ concerning situation
on the labor market and job opportunities of patients
in the remission phase of schizophrenia. Important-
ly, to our knowledge there have been no previous
analyses carried out in a similar way and among stu-
dents who will soon be experts responsible for effec-
tive treatment of mental disorders. Aside from that,
results of this study should lead to an update of cur-
ricula and educational programs which should be
aimed at providing information about comprehe-
sive and cost-effective treatment of mental disor-
ders. It is also aimed at creating academic leadership
in developing social awareness about the actual
course of schizophrenia and thus may help patients
effectively come back to the labor market and to the
society likewise.

**METHODOLOGY**

The study was carried out between October
2015 and October 2016 using a specially designed
questionnaire comprising five open-ended questions
and a statistical section related to the students’ fac-
culty and their current place of residence. Before the
study, the questionnaire was evaluated and accepted
by 5 psychiatrists and experts in the field of econo-
ymy of mental health care. What is important, the
questionnaire was constructed to be easy and rapid
to fill in (the fulfillment lasts approximately 2-3
minutes). In questions 1 to 3 and in question 5, the
respondents were asked to choose from the follow-
ing answers: “agree”, “hard to say” and “disagree”.
The questions were related to patients’ situation on
the labor market and concerned respectively: the
fear of looking for a job, willingness to work, sig-
nificance of less frequent inpatient stays for better
quality of life, and the effect of non-pharmacologi-
cal therapies on success in getting a job. In question
4, however, study participants were asked to indi-
cate the percentage of patients employed and
patients that might be employed during remission.

Potential variants were percentage rates in 10%
increments and starting from the range of 0-10%,
and ranked from 1 to 10 respectively. Apart from the
generally presented probability (statistical signifi-
cance was based on p = 0.05), results in question 4
are also related to the median with interquartile
range Me (25-75%).

The anonymous study tool was delivered to
students of pharmacy, medicine and public health
faculties who had completed at least the third year of
their studies. It was to ensure both a better aware-
ness and a better knowledge of the respondents in
the field of mental disorders. The inclusion of stu-
dents of pharmacy might be questionable. However,
pharmacists also have direct contact with patients,
but their role is sometimes underestimated.

Nevertheless, within the pharmaceutical care they
are able to inform not only about medicines, but also
about the illness and non-pharmacological therapies
e.g. related to SE.

Potential respondents were selected by sending
the request to fill in the questionnaire to students sci-
cientific organizations and/or our partners from other
Universities (e.g. Zentrum für Integrative Psychiat-
rie of Christian-Albrecht University in Kiel –
Germany; Department of Pharmacology Medical
University of Plovdiv – Bulgaria). Apart from that,
the questionnaire was distributed to students by
direct contact and via the Internet. The addressed
participants were requested to return them “at once”
if possible or by e-mail.

Initially, the study was conducted in Poland
and later the questionnaire was sent to potential
respondents in other European Union (EU) coun-
bries. Of a 5200 of distributed requests, 1036 ques-
tionnaires were received and 942 were finally
included in the study. 739 were from Poland and 203
were collected in other EU countries. 94 question-
naires were excluded since they were addressed at
an inappropriate group of respondents (students of
different faculties e.g. physiotherapy) or were filled-
in incorrectly (e.g. statistical information was not
provided). Analysis of data concerning the faculties
has shown that no respondent from “other EU”
countries represented a Public Health faculty. Many
students refused to participate in the study due to
their lack of knowledge, lack of interest in the field,
and/or unwillingness to participate in such a study.
These reasons were indicated both by potential
respondents and by partners from befriended
Universities where study was carried out.

The questionnaire is available upon request
from the corresponding author.
RESULTS

In question one, majority (83.86%) of the participants answered that patients in the remission stage of schizophrenia were afraid of looking for a job. The option “hard to say” was marked by 10.94% of the respondents and “disagree” by 5.20%. Among Polish (PL) and European (EU) respondents, “agree” was the first choice, too, reaching 85.93% and 76.35% respectively. “Hard to say” was marked by 9.20% of PL and 17.25% of EU participants. “Disagree”, however, was indicated by 4.87% of PL and 6.40% of EU respondents. A statistical relationship was observed between answers to question one and study groups (p = 0.003).

In question two, the study participants (p = 0.380) mostly declared (62.42%) that the patients would like to work. Nevertheless, 22.82% opted for the “hard to say” variant and 14.76% for “disagree”. Answers given by PL and EU respondents were as follows: “agree” 62.79% and 61.09%; “hard to say” 23.27% and 21.18%; “disagree” 13.94% and 17.73%, respectively.

In question three, respondents (p = 0.046) agreed that less frequent hospitalizations improve quality of life of both the patients and their healthy caregivers. Answer “agree” was given by 51.44% of study participants, “hard to say” by 30.03%, and “disagree” by 18.53%. Among PL respondents, “agree” was chosen by 51.36%, followed by “hard to say” – 31.52%, and “disagree” – 17.12%. Among participants from other EU countries, the results were as follows: 51.72% “agree”; 24.63% “hard to say”, and 23.65% “disagree”.

In question four, most study participants (24.25%) indicated that the number of working people suffering from schizophrenia is between 20% and 30%, followed by the range of 10-20% chosen by 21.60% of respondents. The number of mentally ill people whom the students considered capable of working is significantly higher, reaching 20.84% of answers for the range of 70-80%, and 18.26% for the range of 60-70%. In Poland as well as in other EU countries the most popular answer related to the number of working people was the variant of 20-30%, chosen by 24.83% and 22.17% of respondents, respectively. In terms of the capacity to work the 70-80% range was the most popular answer among PL participants (22.53%). In other EU countries, however, it was 60-70% chosen by 18.23% of the respondents.

In question five related to the importance of non-pharmacological therapies for getting a job, “agree” was the most popular (84.82%) answer, followed by “hard to say” 13.16%, and “disagree” chosen by 2.02%. Among PL and EU participants, answers were as follows: “agree” 86.60% and 78.33%; “hard to say” 11.37% and 19.70%; “disagree” 2.03% and 1.97%, respectively. A statistical dependence was observed between answers to question five and the study groups (p = 0.008).

Table 1. Distribution of responses related to the number of patients who „work” and who are „capable of working” within remission of schizophrenia.

<table>
<thead>
<tr>
<th>Location</th>
<th>Interquartile range Me (25-75%)</th>
<th>p value</th>
<th>Faculty</th>
<th>Interquartile range Me (25-75%)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients who „Work” during remission of schizophrenia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PL 3</td>
<td>(2-4)</td>
<td>0.1054</td>
<td>Pharmacy</td>
<td>3 (2-5)</td>
<td>0.4318</td>
</tr>
<tr>
<td>Medicine</td>
<td>3 (2-4)</td>
<td>Public Health</td>
<td>3 (2-4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EU 3</td>
<td>(2-4)</td>
<td></td>
<td>Pharmacy</td>
<td>3 (2-5)</td>
<td>0.0139</td>
</tr>
<tr>
<td>Medicine</td>
<td>3 (1-4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patients „Capable of working” during remission of schizophrenia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PL</td>
<td>7 (5-8)</td>
<td>0.0491</td>
<td>Pharmacy</td>
<td>6 (5-8)</td>
<td>0.0555</td>
</tr>
<tr>
<td>Medicine</td>
<td>7 (6-8)</td>
<td>Public Health</td>
<td>6 (4-8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EU</td>
<td>6 (4-8)</td>
<td>0.3943</td>
<td>Pharmacy</td>
<td>6 (4-8)</td>
<td></td>
</tr>
<tr>
<td>Medicine</td>
<td>6 (3-8)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: based on our own studies: Me-Median, PL- Poland, EU- other European Union countries
Percentage rates in 10% increments ranked from 1 to 10 respectively: “1” – 0%-10%, “2” – 10%-20%, “3” – 20%-30%, “4” – 30%-40%, “5” – 40%-50%, “6” – 50%-60%, “7” – 60%-70%, “8” – 70%-80%, “9” – 80%-90%, “10” – 90%-100%
DISCUSSION

Although many people may live normally within remission stage, patients with schizophrenia are perceived as being imponderable, dangerous and affected by an incurable disorder (15). Such stereotyped beliefs in the society might be deepened by the lack of knowledge about mental illnesses (16). In the study conducted by Magliano et al. it was indicated that these feelings concern also students of medicine and psychology, who hold the view that persons with schizophrenia are unpredictable and dangerous (15).

Despite the common stigma and social exclusion of people with schizophrenia (3), those persons frequently want to work and do not want to be discriminated against due to their mental illness (3, 8). This is consistent with the answers obtained from study participants the majority of whom indicated that patients would like to work during remission of schizophrenia. Nevertheless, the rates of employment among people with schizophrenia are low, generally ranging from 10% to 20% (3, 4, 10), but in Poland it is 2% (2). What is important, unemployment rate among patients with schizophrenia might be related to the results of the survey of potential employers who mostly claimed that they would not employ someone who had been mentally ill (4). It may deepen the patient’s marginalization and boost fears of looking for a job during remission of schizophrenia.

In Germany, however, employment rate of patients in the remission stage was estimated slightly above 30% (7) which confirms that a more effective comeback into the society of people affected with schizophrenia is possible. Nonetheless, as it was indicated in the present study, the number of working people is still relatively lower than the number of patients who might be capable of working during remission of schizophrenia. In spite of the fact that there are few research papers about the rate of people who could work in the remission phase, studies carried out both by Srivastava et al. (9) and Zaprutko et al. (2) confirm the tendency of the students’ opinions and surmise that more than 50% of patients might be capable of working during remission of schizophrenia.

In spite of the fact that Magliano et al. (15) presented that majority of students of medicine and

<table>
<thead>
<tr>
<th>Question</th>
<th>Location</th>
<th>Faculty</th>
<th>Type of response</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Medicine</td>
<td>Agree (%)</td>
<td>Hard to say (%)</td>
</tr>
<tr>
<td>1. &quot;patient’s fear of looking for a job&quot;</td>
<td>PL</td>
<td>84.78</td>
<td>10.38</td>
<td>4.84</td>
</tr>
<tr>
<td></td>
<td>EU</td>
<td>77.42</td>
<td>14.52</td>
<td>8.06</td>
</tr>
<tr>
<td>2. &quot;patient’s willingness to work&quot;</td>
<td>PL</td>
<td>73.36</td>
<td>17.30</td>
<td>9.34</td>
</tr>
<tr>
<td></td>
<td>EU</td>
<td>62.90</td>
<td>20.97</td>
<td>16.13</td>
</tr>
<tr>
<td>3. &quot;fewer inpatient stays and better QOL&quot;</td>
<td>PL</td>
<td>56.60</td>
<td>27.08</td>
<td>16.32</td>
</tr>
<tr>
<td></td>
<td>EU</td>
<td>46.77</td>
<td>29.03</td>
<td>24.19</td>
</tr>
<tr>
<td>4. &quot;impact of non-pharmacological therapies for job chances&quot;</td>
<td>PL</td>
<td>86.51</td>
<td>12.11</td>
<td>1.38</td>
</tr>
<tr>
<td></td>
<td>EU</td>
<td>85.48</td>
<td>9.68</td>
<td>4.84</td>
</tr>
</tbody>
</table>

Source based on our own studies: PL - Poland, EU - other European Union countries.
psychology claimed that people affected with schizophrenia are dangerous and unpredictable, the same study confirmed that educational interventions led to the significant change of students’ beliefs about schizophrenia. Hence, the importance of suitable lectures and trainings from the beginning of medical and related (e.g. psychology) studies. Well-educated students also in the field of social economy may contribute, as open-minded health care providers, to better social awareness concerning mental disorders and to the reduction of economic burden of schizophrenia. Hence, curricula and syllabuses need to be updated positively towards mentally ill patients, discriminating them simultaneously, the results obtained in our study might corroborate that study participants already got some knowledge about mental disorders, which allowed to reduce possible prejudices of schizophrenia. Nevertheless, it is important to emphasize that although the questionnaire was directed to students who completed at least the third year of studies (it was probably easier to present their opinions concerning schizophrenia) the return rate of questionnaires seemed not to be satisfactory.

Considering the problems of getting a competitive job by people suffering from schizophrenia, it seems important that therapeutic solutions based on SE for instance should be popularized (3, 5, 17). SE is an evidence-based practice in psychiatric rehabilitation with its key point related to the idea known as “zero exclusion” (18), hence, no person declaring their willingness to work is excluded from receiving this kind of support. Therefore, it allows employment of much more patients than are actually employed (10, 19, 20). Besides, employment improves clinical and social functioning and quality of life, and reduces the number of hospitalizations (10, 20, 21). Hence, patients’ employment may be cost-effective and may reduce direct and indirect costs likewise. Aside from these benefits, patients’ employment may also lead to a reduction of costs generated by their caregivers which in South Korea, for instance, constituted 4.2% of overall costs of schizophrenia (14). In the study by Magliano et al. (21), the authors revealed that the patients’ caregivers give up their employment and dedicate up to 9 h daily to their relatives, being therefore unable to work. Activity, however, helps avoid damage to self-esteem (22) which might be associated with unemployment of the patients and their healthy caregivers, hence solutions leading to a decrease of indirect costs of schizophrenia are important.

Furthermore, SE facilities could be considered as centers where patients work and participate in non-pharmacological therapies. As it has been presented in the study, non-pharmacological interventions like psychoeducation or social skills training are useful in finding and keeping employment. In addition to this, in the study conducted by Mueser and McGurk (3), this type of treatment was mentioned not only as effective in the field of employment but also in relation to independent living and enhancement of social relationships. Moreover, it seems that the increasing number of employed patients might lead to improvement of social awareness about the real course of schizophrenia and about the social perception of those in the remission stage. Considering that a lack of knowledge about mental disorders is associated with negative attitudes toward schizophrenia and contribute to discriminating behavior (16), changes in the way of thinking about mentally ill persons might be crucial for stigma reduction.

In spite of the fact that there were some differences in answers obtained from respondents representing different faculties (Table 2), the answers provided by study participants in general seem to confirm their awareness of the situation in the labor market of people suffering from schizophrenia. Considering the results presented by Magliano et al. (15) and indicating that students might react less positively towards mentally ill patients, discriminating them simultaneously, the results obtained in our study might corroborate that study participants already got some knowledge about mental disorders, which allowed to reduce possible prejudices of schizophrenia. Nevertheless, it is important to emphasize that although the questionnaire was directed to students who completed at least the third year of studies (it was probably easier to present their opinions concerning schizophrenia) the return rate of questionnaires seemed not to be satisfactory. Hence, curricula and syllabuses need to be updated also in the field of social economy to remove the stigma and reduce the economic burden of schizophrenia. Suitable lectures and courses aimed at teaching the students about economic aspects of schizophrenia should give them many-sided knowledge in the field and should pay off in a cost-effective treatment as well as in reduced social isolation of people suffering from mental disorder. Well prepared students, as future decision-makers, should also contribute to the amendment of legislation associated with mental health care and emphasize the need of rationalization of spending on psychiatry which is underfunded in some countries (23).

Despite the importance of this issue, the study also has some limitations. First of all, the sample could have been larger. Although, the study was conducted among students who completed at least the third year of their studies, many potential participants, however, refused to join the study claiming that they have no knowledge of this field. It confirms that educational interventions are still needed and are necessary to reduce stigma as well as health and economic burden of schizophrenia. Another limitation of this study might be eliminated by the presentation of exact data about the country of origin of respondents. Nevertheless, as some of our respondents were Erasmus program participants or
could have completed several traineeships we decided to collect only information about their current place of residence. Although we assumed that English is a universal language, it would be useful to develop the questionnaire in other languages too e.g. Spanish, French or German and, thus, to receive more filled-in sheets. One of the limitations of this study was that the questionnaires had not been distributed among the lecturers. It could help us receive their feedback on educational programs and, hence, suggest the most effective updates. Although the study seems to be important, further international studies may be essential to collect data in this field and to update the conclusions.

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Ethical approval

This article does not contain any studies with human participants performed by any of the authors.

Conflict of interest

The Authors have no conflict of interest to declare.

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