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Stigmatized Attitudes Toward Mental Illness Among Medical Students

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TABLE OF CONTENTS

1. SUMMARY.....4

2.ACKNOWLEDGMENTS.....6

3. CONFLICT OF INTEREST.....6

4. PERMISSION BY THE ETHICS COMMITTEE.....6

5. ABBREVIATION LIST.....7

6. TERMS.....8

7. INTRODUCTION.....9

8. AIM AND OBJECTIVES.....10

9. REVIEW OF THE LITERATURE.....11

9.1 Contextualizing stigma.....11

9.2 Stigma in medical training.....12

10. METHODOLOGY.....15

10.1 Study design and participants.....15

10.2 Measurements of stigma.....15

10.3 OMS-HC Scale.....16

10.4 Hypothesis and Variables.....17

10.4.1. Cultural Variables.....17

10.4.2. Research Hypotheses.....17

10.5 Data analysis.....18

11. RESULTS.....19

11.1 OMS-HC Scale reliability.....19

11.2 Participants demographics.....19

11.3 Descriptive statistics of stigma scores.....20

11.4 Group comparison based on study Hypotheses.....20

11.4.1. Hypothesis 1 - Cultural background.....20

11.4.2. Hypothesis 2 - Personal exposure subgroup.....20

11.4.3. Hypothesis 3 - Clinical exposure subgroup.....21

12. DISCUSSION OF THE RESULTS.....22

12.1 OMS-HC Scale reliability.....22

12.2 Evaluation of Study Objectives.....22

12.2.1 Comparisons with Previous Studies.....22

12.2.2 Post-hoc Exploratory Analysis: Age and Stigma.....23

12.3 Limitations.....24

13. CONCLUSIONS.....25

14. PRACTICAL RECOMMENDATIONS.....26

15. LITERATURE LIST.....27

1. SUMMARY

Research conducted by: Itamar Ido Ohana

Title of the study: Stigmatized Attitudes Toward Mental Illness Among Medical Students

Aim of the study: To explore the influence of cultural background and exposure to mental illness on stigma among medical students.

Objectives:

1. To compare stigma toward individuals with mental illness between Lithuanian students and other (refers to international students) medical students.
2. To assess whether differences in stigma exist between Lithuanian and other students within the subgroup of those with personal or clinical exposure to mental illness.

Methods: The study utilized a voluntary self-report survey administered online (via social media) and in-person (paper and pencil). Demographic information (students' national origin, year of study, age) was collected, and participants completed the Opening Minds Stigma Scale for Health Care Providers (OMH-HC). The targeted sample size for this study was 200 participants, but due to feasibility constraints only 70 responded, resulting in a sub-optimal response rate.

Results: For Objective 1, there was no statistically significant difference in overall mean stigma score between Lithuanian and other medical students. For Objective 2, subgroup comparisons (clinical vs. personal exposures) did not reveal a statistically significant difference in stigma scores between Lithuanian and other students.

Conclusions: Regarding the first objective, there was no statistically significant difference in stigma scores between Lithuanian and other students. However, Lithuanian students displayed somewhat higher mean stigma scores compared to other students across all comparisons. Regarding the second objective, assessment based on exposure criteria revealed that both personal and clinical exposure subgroups displayed no statistically significant difference in stigma score between Lithuanian and other students.

Recommendations: We recommend introducing anti-stigma programs as early as possible within medical education, as clinical exposure displayed some notable influence on stigma reduction across the literature. These programs should emphasize elements like personal recovery stories and myth-busting to maximize their effectiveness. We advocate for promoting peer-led discussion groups and creating a safe, open forum

for talking about mental health issues. Lastly, repeat the study with a larger sample size to validate or refute the findings of this thesis, while also ensuring a more diverse sample in future studies

2. ACKNOWLEDGMENTS

This work was supported by Lithuanian University of Health Sciences (LSMU). I would like to express my sincere gratitude to my supervisor, Prof. Lina Danusevičienė, and to Emeritus Prof. David Harrison, who generously offered his pro bono guidance and support. Their invaluable advice, insightful feedback, and encouragement have played a key role in helping me achieve my goals and grow professionally throughout this journey. I am deeply grateful for their time, dedication, and belief in my work.

3. CONFLICT OF INTEREST

The author declares no conflict of interest.

4. PERMISSION BY THE ETHICS COMMITTEE

Permission to conduct the research was granted by the Ethics Committee (No. 2025-BEC2-0547) on April 9, 2025, by Dr. Eimantas Peičius.



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5. ABBREVIATION LIST

LSMU – Lithuanian University of Health Sciences

OMS-HC - Opening Minds Scale for Health Care Providers)

CEE – Central and Eastern Europe

M – Mean

SD – Standard deviation

t - test statistics

p - Probability value (statistical significance)

n - Sample size (number of participants)

α - Cronbach's alpha (internal consistency coefficient)

6. TERMS

Stigma: An attribute that is deeply discrediting, reducing its bearer from a whole and usual person to a tainted, discounted one.

Public stigma: The reaction that the general population has to people with mental illness. This may be manifested as stereotypes (negative belief about a certain group), prejudice (agreement with stereotype and/or negative emotional reaction) or discrimination (unfair behavior).

Self-stigma: Occurs when individuals internalize public stereotypes and apply them to themselves. This can result in lower self-esteem and self-efficacy and may lead people to believe that they are not capable of achieving their goals.

Structural stigma: Refers to the societal-level conditions, cultural norms, and institutional practices that constrain the opportunities, resources, and wellbeing for stigmatized populations. This form of stigma describes the unfair social systems limiting the resources and freedoms available to certain groups without a justified reason.

Clinical years: In this study, medical school years 4-6, during which students are exposed to direct patient interactions and care as part of their clinical rotations.

Contact-based intervention: An anti-stigma educational approach in which participants meet people with lived experience of mental illness. Shown to reduce stigmatizing attitudes more effectively than lectures alone.

Pre-clinical years: 1-3 years of Medical, focused on classroom-based basic sciences with little to no patient-based studying experience.

Personal exposure: Every non-professional contact. Personal familiarity with mental illness - whether through one's own diagnosis or treatment, or through social connections such as family members, friends, neighbors, classmates, or colleagues.

Clinical exposure: Every contact with mental illness that occurs in a professional or educational setting, such as through clinical rotations, volunteer work, or academic coursework involving direct patient care.

Labelling: Psychological mechanism that is involved in the assignment of labels to someone, in order to describe or classify them.

7. INTRODUCTION

Stigma associated with mental health is a significant global concern that influences how societies perceive, interact, and treat affected individuals. In the case of Lithuania and other post-Soviet countries, attitudes towards mental illness were shaped by a sequence of traumatic events and political oppression [1]. During the Soviet era, resources were allocated away from the mental healthcare system, leading to poor service quality marked by shortage of staff and inadequate infrastructure [2]. This resulted in a constrained system that was still anchored to past practices and had limited potential to grow, a problem that still persisted long after Lithuania's independence.

In recent years, Lithuania has suffered from a rising prevalence of mental health problems [3] and the highest suicide rates in Europe [4]. The Lithuanian government initiated several awareness campaigns in the hopes of enhancing mental health literacy and improve perceptions. This shift had a notable positive impact, like the substantial reduction of suicide mortality. However, mental illness and the stigma associated with it are still widespread. One explanation for this is the role stigma plays as a major barrier to help-seeking behaviors [5,6].

To properly address stigma, a clearer understanding of its origins and underlying components is needed. This is especially relevant in healthcare settings, since it was shown that healthcare providers' personal biases could influence the diagnosis, treatment decisions, and levels of care [7]. In this context, medical students make an ideal group for examining how stigmatizing attitudes toward mental illness form, and how they are perpetuated throughout medical education.

This study assessed the influence of certain exposure criteria (personal or clinical) and the cultural effect in the development of stigma-related attitudes among medical students in Lithuania. For this purpose, the Opening Minds Scale for Healthcare Providers (OMS-HC) was used, as it is a standard instrument for measuring stigma among medical personnel [8]. The conclusions of this study could be used to inform improvements in medical education and promote more inclusive mental health care practices.

8. AIM AND OBJECTIVES

Aim of the study: To explore the influence of cultural background and exposure to mental illness on stigma among medical students.

Objectives:

1. To compare stigma toward individuals with mental illness between Lithuanian students and other (refers to international students) medical students.
2. To assess whether differences in stigma exist between Lithuanian and other students within the subgroup of those with personal or clinical exposure to mental illness.

9. REVIEW OF THE LITERATURE

9.1 Conceptualizing stigma

Stigma is a socially constructed concept that is shaped through power dynamics between dominant and marginalized groups and reinforced by labels and stereotypes. Labelling refers to a psychological mechanism that is involved in the assignment of labels to someone, in order to describe or classify them [9]. These labels can often be associated with stereotypes that could eventually lead to social exclusion or marginality. Erving Goffman, a well-known sociologist whose theoretical model on stigma remains foundational across the literature, defined stigma as "An attribute that is deeply discrediting, reducing its bearer from a whole and usual person to a tainted, discounted one". Goffman claimed that the perception of stigma does not arise from the attribute itself, but from the negative meaning that is attached to it in a given social context [10]. According to Goffman, stigma can be divided into three general types: "Visible Physical deformities" like blindness or deafness, "Character blemishes" like in the case of addictions or mental illness, and "tribal stigma" that is based on group-related factors (e.g., race, religion).

Building on Goffman's work, researchers such as Corrigan and Watson proposed a more contemporary categorization that is widely used today in stigma research [11]. This categorization distinguishes between three forms of stigma:

1) Public stigma - the reaction that the general population has to people with mental illness. This can manifest as stereotypes (negative beliefs about a certain group), prejudice (agreement with the stereotype and/or negative emotional reaction) or discrimination (unfair behavior)[11].
2) Self-stigma - occurs when individuals internalize public stereotypes and apply them to themselves. This can result in lower self-esteem and self-efficacy and may lead people to believe that they are not capable of achieving their goals [11].
3) Structural stigma – refers to the "societal-level conditions, cultural norms, and institutional practices that constrain the opportunities, resources, and wellbeing for stigmatized populations". This form of stigma describes the unfair social systems limiting the resources and freedoms available to certain groups without a justified reason [12].

These three forms of stigma conceptually reflect both attitudes and behaviors associated with mental illness and do not operate independently; they often interact or influence one another [13]. For example, public stigma is often demonstrated by applying stereotypes or using language that could be discriminative or dismissive, like referring to someone as "crazy" or "unstable" [14,15]. If this behavior is

observed or tolerated throughout medical education, it could lead to the formation of self-stigma, where students absorb and internalize those beliefs. Moreover, societies with substantial prevalence of public stigma could eventually demonstrate forms of structural stigma (e.g., a shift in policymaking leading to defunding of mental health initiatives).

While this thesis primarily uses the term stigma in its aim and objectives, the phrase “stigmatized attitudes” was deliberately chosen for the title to reflect how people generally think or feel about mental illness in a more everyday, commonly understood way. This wording keeps the focus on personal thoughts and feelings, without extending into the wider social context or actions that the word stigma can also refer to. The term stigma is retained elsewhere to remain consistent with the broader theoretical framework used across the literature.

Beyond individual and institutional aspects, we should also consider the broader cultural context, as stigma is often shaped through culture, tradition, and educational factors [16]. This was illustrated in a recent scoping review by Winkler [17] which covered 25 years of mental healthcare and stigma research in Central and Eastern Europe (CEE). The review examined qualitative and quantitative studies together with expert surveys from 23 former Soviet Union countries, producing detailed country-specific reports. Some notable findings of this review include that stigma-related views in CEE were higher than in the rest of Europe, with remarkably pronounced levels of public stigma. In the general population, particularly among healthcare professionals, discriminatory views towards mental illness were fairly common, which in turn negatively influenced policymaking (e.g., through resource allocation). The review also uncovered major gaps in literature on stigma research for CEE countries, suggesting that these findings should be interpreted with caution due to limited data and depth. These gaps in literature further reinforce the need to conduct additional research into the cultural component of stigma.

9.2 Stigma in Medical Training

The medical educational environment shapes future doctors' attitudes towards mental illness. It is not only a training facility that provides clinical knowledge but also serves as a place where cultural and professional norms intersect - both formally as part of the medical curriculum, and informally by implicit interactions. This section of the literature review will explore how stigma manifests throughout medical education, what might mitigate or reinforce it, and what strategies are effective for addressing it.

One barrier to reducing stigmatizing attitudes in medical training is the limited integration of psychiatric content. Literature on this topic suggests that positive experiences during psychiatry rotations can help

create more favorable attitudes towards certain mental illnesses [18]. However, such exposure does not necessarily dispel stigma towards psychiatry itself, as many students still view it as a low-status, less respected specialty [19].

To further examine the impact of education on the formation of stigma, we reviewed several studies on anti-stigma initiatives, particularly those that incorporated psychiatry-related content into medical training. For example, Papish [20] conducted a randomized controlled trial to assess the effectiveness of stigma-reduction interventions. The study involved 111 Canadian medical students comparing stigma scores between two groups: one that participated in a one-time anti-stigma intervention, and another that completed a 4-week psychiatry course which involved more interactions with patients who had mental illness. Stigma scores were measured before and after using the OMS-HC scale. Although both groups showed reduced stigma scores following their interventions, the psychiatry course group was the only one that had a statistically significant reduction. The students who participated in the one-time intervention group did not exhibit a statistically significant reduction in score, indicating limited impact on stigma. These findings suggested that embedding more psychiatry-related content and contact-based interactions early on in medical training could prove more effective for reducing stigma compared to one-time interventions.

While Papish's study focused on two forms of anti-stigma initiatives, Knaak [21] conducted a broader investigation to identify the most effective component for stigma reduction in multiple healthcare settings. Knaak reviewed 22 anti-stigma programs, highlighting six key elements that were associated with reduced stigma. Each program was measured using verified instruments (e.g. OMS-HC scale) to determine whether it was successful, based on the before and after change in stigma scores. Similar to Papish's results - Knaak emphasized that social contact (especially when repeated) is a crucial component for an effective intervention. Additional elements evident in more successful programs include teaching students practical skills for interacting with patients, providing guidance on *what to say and what to do*, and incorporating myth-busting efforts. Lastly, it was evident that personal recovery stories had a major contribution for achieving the program's goals.

The faculty's behavior and informal role modelling may also play a role in the formation of stigma in medical training, as it could negatively impact students' perceptions of patients who have mental illness. This topic is often referred to as 'the hidden curriculum'. In their study, Wear and Skillicorn [22] conducted a qualitative investigation on the hidden curriculum by interviewing two groups of psychiatric faculty/staff (N=18) along with third-year medical students (N=60) during their psychiatry rotations. The

study examined how formal, informal, and hidden curricula messages were conveyed by the staff to the students. These informal and hidden teachings emerged through various means, such as offhand remarks displayed by instructors. An interesting finding of this study revealed a mismatch between the values students adopted through formal teaching and though conveyed by observation. While all participants agreed that forming therapeutic relationships with patients was highly valuable, in practice, some senior doctors exhibited behaviors that contradicted the formally taught values. For example, by speaking cynically about patients or spending minimal time with them. This contradiction between what was taught and what was signaled by observation may also lead to internalization of stigmatized views.

The influence of contact-based exposure to mental illness on stigma are not limited to formal education. Personal exposure to individuals who have mental illness has been associated with generally less stigmatizing attitudes[23]. This was demonstrated in a Canadian study by Sandhu [24], who used the OMS-HC scale to compare stigma score among 538 participants (38 psychiatrists ,118 medical students, and 382 undergraduate students). Sandhu revealed that stigma scores were much lower ($p < 0.001$) among participants who were previously diagnosed with mental illness ($M=27.33$, $SD=5.96$), compared to those without such conditions ($M=29.30$, $SD=5.78$). Likewise, stigma scores were much lower ($p<0.001$) among participants who had close relationships with mentally ill individuals ($M=28.25$, $SD=5.83$) compared to those who did not ($M= 31.35$, $SD=5.39$). These findings emphasize that personal exposure does not necessarily guarantee a reduction of stigma, as many additional variables are in play (include the depth, quality and context of the relationship, which might either amplify or attenuate its effect).

In order to better understand the impact that internalized stigma has on students, several studies on stigma among medical students were reviewed. This was captured in a study by Schwenk [25], who conducted a web-based survey [N=505] among depressed and non-depressed medical students, evaluating their perception of stigma associated with depression. Some notable findings of the study include that a significantly larger proportion of depressed students were afraid of losing the respect of their peers if their condition became known (56.0% vs 23.7%), and that faculty would view them as less capable (83.1% vs 55.1%). Moreover, first-and-second-year students were more likely than third-and fourth-year students to report that seeking help for their condition would make them feel less intelligent (34.1% vs 22.9%). This finding implies that higher clinical years might be linked with less stigmatized views.

In summary, this review of the literature covers some of the central components of stigma and some of the ways it manifests throughout different aspects of medical training. As most of the research on stigma was focused on large-scale, western academic settings, it emphasized the need to explore stigma trends in

areas that have received relatively little attention. Although this study does not directly measure the cultural component effect through a validated scale, it is situated in a post-Soviet context that continues to influence professional norms and social expectations. This makes for an interesting environment for examining how stigmatizing attitudes are formed throughout medical education in Lithuania and identifying what helps alleviate stigma.

10. METHODOLOGY

10.1 Study Design and Participants

This study employed a quantitative, cross-sectional survey design to examine stigma-related attitudes toward mental illness among medical students. The primary independent variable was categorical, representing students' national/cultural identity (Lithuanian or others), and the dependent variable was the stigma score, measured by using the Opening Minds Scale for Healthcare Providers (OMS-HC). This setup allowed for group comparisons. Study population consisted of medical students from both Lithuanian and other backgrounds, allowing for cross-cultural comparisons. The study was conducted during LSMU's autumn and spring semesters of 2025.

The study sample consisted of medical students who voluntarily participated by either completing an online questionnaire, that was distributed via social media platforms, or by filling out paper forms distributed on university premises. All responses were recorded anonymously.

The Lithuanian students completed a version of the questionnaire that was translated into Lithuanian while the other student group received the original English version. Each item was initially translated using online translation tools. Afterwards, a draft of the Lithuanian version was created and reviewed by a native Lithuanian speaker familiar with the instrument's field of study (prof. Lina Danusevičienė, MA in Sociology) to check for wording issues, offer phrasing adjustments, and confirm item clarity. To ensure consistency - item-level consistency testing was conducted to support the adapted translation.

Ethical Approval: This study was approved by LSMU's Ethical Committee [Nr. 2025-BEC2-0547]. All participants provided informed consent electronically before answering the questionnaire.

10.2 Measurement of Stigma

Measuring stigma presents a difficult challenge due to its subjective and multi-dimensional nature. There are numerous scales and tools available covering different aspects of stigma. Such instruments can be applied across multiple contexts, which is valuable as it allows for validity testing and meaningful cross-

group comparisons. Upon reviewing the literature for this study, the OMS-HC scale was commonly used in many similar studies that had similar aims - comparing stigmatizing attitudes among medical students of different cultural backgrounds. The scale was specifically designed to be used within healthcare settings, measuring stigma among physicians, nurses, and medical students. Thus, it was selected for this study.

Focus of the research: In line with the study objectives, three main themes related to stigma were explored: 1) cultural influences on stigma toward mental illness, 2) personal exposure to individuals with mental illness, 3) clinical exposure to individuals affected by mental illness.

10.3 OMS-HC Scale

This study utilized the **Opening Minds Scale for Healthcare Providers (OMS-HC)** to assess stigma among medical students. Each item was rated using a 5-point Likert scale, with scores ranging from 1 (strongly disagree) to 5 (strongly agree). Overall stigma score is then calculated ranging from 15–75 points, with higher scores indicating stronger stigma.

The original OMS-HC scale had 20 items, though in a follow-up study by Modgill [26] additional factor analysis was conducted suggesting that 5 items could be removed without compromising the scale's internal consistency. Accordingly, the 15-item version of the OMS-HC scale proposed by Modgill was used in this study.

In terms of reliability, the OMS-HC scale has demonstrated good reliability across its 20, 15 and 12-item variations. In Modgill's version of the 15-item scale, the internal consistency score was $\alpha=0.79$ ($N=1305$) across all examined groups (e.g. nurses, MD, etc.). Additionally, medical students showed the lowest internal consistency score compared to all other groups ($\alpha=0.75$, $N=188$).

In terms of validity, the scale's validity was determined through content validation. This process involved expert consultations in the field of stigma, focus groups comprised of healthcare providers (n=64) and mentally ill individuals (n=6), expert consultations, and cognitive interviews to refine the language and tone of scale's items.

During the evaluation of data this study treated stigma as a unified construct. The original version of the scale can be broken up into three subscales - Attitudes toward individuals with mental illness, Disclosure and Help-Seeking, and Self-Stigma. These subscales correspond to many central themes that were explored during literature of the review (e.g., self-stigma, attitudes). However, it was decided not to

include them in the data analysis in order to stay aligned with the study's aims and avoid additional complexities.

10.4 Hypothesis and Variables

The general hypothesis of the study is that cultural and environmental factors (clinical and personal exposure to mental health) are associated with different levels of stigmatizing attitudes toward individuals with mental illness among medical students.

10.4.1. Cultural variables - defined in terms of nationality (Lithuanian or other). Culture is proxied by nationality and was not measured directly by standardized instruments (e.g.: cultural values scale) for the sake of concision and to maintain sufficient response rate. Although not optimal it was evident from the literature that many other studies that explored culture-related stigma have used nationality as a proxy for culture [27].

Three independent variables were specified:

1. Nationality (Lithuanian =2, other =1)
2. Personal exposure with mental illness, measured dichotomously (yes=1, no=0)
3. Clinical exposure, defined by stage of medical training (4^{th}-6^{th} years =clinical 1^{st}-3^{rd} years = pre-clinical)

The dependent variable is the total stigma score on the OMS-HC. Higher total scores indicate stronger stigma

10.4.2. Research Hypotheses

1. **Cultural background:** Lithuanian students will report higher scores on the OMS-HC scale compared to other students.
2. **Personal exposure:** Among students who had personal exposure to individuals with mental illness, no significant difference in stigma scores is expected between Lithuanian and other students.
3. **Clinical exposure**: Among students with clinical exposure (defined by clinical years 4^{th} -6^{th}) no significant difference in stigma scores is expected between Lithuanian and other students.

It is important to clarify that Hypotheses 2 and 3 each examine the impact of a different form of exposure on cross-cultural differences. These two variables (personal and clinical exposure) were tested independently, each representing a factor we expect to reduce stigma to such an extent as to potentially

render any baseline culture-based differences between Lithuanian students and others negligible. Importantly, we do not assume that the two forms of exposure are of equal impact in reducing stigma - their influence was analyzed separately.

10.5 Data Analysis

Data were analyzed using IBM SPSS Statistics. Descriptive statistics (means and SD) summarized stigma scores. Items 2,6,7,8 and 14 were reverse coded to ensure consistency with the original scale. Internal consistency of the OMS-HC scale was evaluated with Cronbach's α for the full sample and separately for each version of the questionnaire (LT/EN).

Group comparisons were conducted via independent samples t-tests comparing mean stigma scores between Lithuanian students and others.

Hypothesis 1 estimated that Lithuanian students will report higher scores on the OMS-HC scale compared to other medical students. P-values were reported using a one-tailed test of significance.
The remaining analyses applied exclusion criteria aligned with their corresponding hypotheses. Results were reported using a two-tailed test of significance.
Hypothesis 2 suggested that among students with personal exposure to mental illness, no significant difference in stigma scores would be expected between Lithuanians and others. Therefore, students who reported no personal exposure to mental illness were excluded from the comparison.
Hypothesis 3 estimated that among students with clinical exposure (defined by clinical years 4^{th} -6^{th}) no significant difference in stigma scores would be expected between Lithuanians and others. Thus, participants in the pre-clinical years (1st-3rd) were excluded from the comparison.

11. RESULTS

11.1 OMS-HC Scale reliability

The OMS-HC scale showed good internal consistency, as indicated by Cronbach's Alpha value. The combined total sample's alpha coefficient was 0.790. The Lithuanian sample had the highest reliability (α=0.850) while the English version (answered by "other" students) had the lowest reliability (α= 0.713). However, all values were still within the acceptable reliability range ($\geq$ 0.70).

11.2 Participants demographics

A total of 70 medical students participated in the study, consisting of 30 Lithuanian and 40 other students.

Participants defined as "others" represented a diverse group of international medical students, predominantly from Israel (37.5%) Germany (22.5%), and Sweden (17.5%). The remaining 22.5% came from various other countries (each ≤5% of the sample).

The majority of students (54.3%) were between 21 and 25 years old, followed by 35.7% aged 26 to 30. A smaller portion of the sample was 30 years or older (5.7%), and only 4.3% were 20 or under. 61.4% of students identified as female and 38.6% identified as male. 81.4% of students were in their clinical years (4^{th}-6^{th} year) while 18.6% of students were in their preclinical years (1^{st}-3^{rd} year). The demographic information of participants is summarized in Table 1.

Table 1. Demographic information

Variable	Category	Frequency (n)	Percentage (%)
Age group	20 or under	3	4.3
	21–25	38	54.3
	26–30	25	35.7
	>30	4	5.7
Gender	Female	43	61.4
	Male	27	38.6
Nationality	Others	40	57.1
	Lithuanian	30	42.9
Year of study	Clinical (4^{th}-6^{th})	57	81.4
	Pre-clinical (1^{st}-3^{rd})	13	18.6

11.3 Descriptive Statistics of Stigma Scores

The mean total sum score for the OMS-HC scale was 36 (SD = 8), with scores ranging from 20 to 59 across the sample. Higher scores represent more stigmatized attitudes toward individuals with mental illness. - Lithuanian students (M = 37.5) and other students (M = 34.9). These values are included as descriptive context for the group comparison. A summary of the mean stigma scores by nationality and Cronbach's Alpha values from each version of the questionnaire are presented in Table 2.

Table 2. Descriptive statistics for the total stigma score and internal consistency values (α)

Group	N (%)	Mean total stigma score	Standard Deviation (SD)	α -value
Others	40 (57.1%)	34.9	6.9	0.71
Lithuanian	30 (42.9%)	37.5	9.2	0.85
Total sample	70 (100%)	36	8	0.79

11.4 Group Comparisons Based on Study Hypotheses

11.4.1. Hypothesis 1: Cultural background

The first hypothesis estimated that Lithuanian students will report higher scores on the OMS-HC scale compared to other medical students. A one-sided independent t-test revealed no statistically significant difference in stigma scores between Lithuanian and other medical students ($p = 0.088$, $t=-1.366$). Notably, Lithuanians did report slightly higher mean stigma scores (M = 37.5, SD = 9.2) compared to other medical students (M = 34.9, SD = 6.9), yet this difference did not reach the threshold for statistical significance ($p < 0.05$) and may be attributable to chance. Therefore, the results do not provide substantial evidence to support this hypothesis.

11.4.2. Hypothesis 2: Personal exposure

The second hypothesis suggested that among students who had personal exposure with mental illness, no significant difference in stigma scores is expected between Lithuanians students and others.

Participants were asked to indicate the scope of their personal exposure/familiarity, such as through a family member, close friend, or themselves. This information was eventually not included during analysis, since it would involve comparing very small numbers of participants, which may result in insufficient statistical power for detecting meaningful differences. Therefore, it was decided to measure personal exposure as dichotomous variable (yes/no)

Out of 70 participants, 57 (81.4%) students reported such contact and formed the “Personal exposure” subgroup (23 Lithuanian and 34 other students). The remaining 13 participants were left out of the analysis.

Independent sample *t*-tests were conducted to compare mean stigma scores. The Lithuanian students (M = 35.5, SD = 7.9) had a slightly higher stigma score compared to other medical students (M = 34.6, SD = 7.1), but this difference was not statistically significant (p = 0.650, t = –0.457). These results confirm the second hypothesis, but due to the modest sample size this interpretation should be viewed with caution.

11.4.3. Hypothesis 3: Clinical exposure

The third hypothesis suggested that among students with clinical exposure (defined by clinical years 4^{th} – 6^{th}), no significant difference in stigma scores is expected between Lithuanians and others. In Lithuania, medical study programs are generally divided into pre-clinical years (1st-3rd years) focusing primarily on theoretical studies, and clinical years (4^{th}-6^{th} years) which take place in a hospital setting, providing a hands-on study experience facilitated by student-patient interactions.

Based on this rationale, participants were filtered based on the clinical year subgroup, defined by their study year (1^{st}-3^{rd} or 4^{th} - 6^{th}) of medical school.

Out of 70 students, the vast majority (N = 57, 81.4%) were included in the clinical exposure subgroup. This group consisted of 22 Lithuanian and 35 other medical students. 13 Students who were not part of this subgroup were excluded from the analysis.

An independent samples *t*-test was used to compare stigma scores between the two groups within the clinical exposure subgroup. Lithuanian students (M = 36.9, SD = 9.9) reported slightly higher stigma levels compared to other students (M = 35.3, SD = 7.2), but this difference was not statistically significant (p=0.493, t= -0.691). These results support the third hypothesis. However, the relatively small sample size limits the strength of this conclusion, and results should be interpreted cautiously. A summary of all 3 hypotheses are reported in Table 3.

Table 3. Summary of hypothesis results

Hypothesis	Described comparison	Lithuanians Mean (SD)	Other students Mean (SD)	p value	t value
H1	Lithuanian vs Other Medical Students	37.5 (9.2)	34.9 (6.9)	0.088	-1.366

H2	Lithuanian vs Other Students with personal exposure to mental illness	35.5 (7.9)	34.6 (7.1)	0.650	-0.457
H3	Lithuanian vs Other Students with clinical exposure	36.9 (9.9)	35.3 (7.2)	0.493	-0.691

12. DISCUSSION OF THE RESULTS

12.1 OMS-HC Scale reliability

In terms of scale-reliability, an item-level analysis revealed nuances in the scale's performance. Items 2, 6, 7, 8 and 14 required reverse scoring. Apart from Item 8, removal of each reversed item from the scale would improve the alpha coefficient value for both the Lithuanian and English versions of the questionnaire. This could be explained by some loss of clarity during translation, or some respondents misreading or misinterpreting those items. The issue of reversed-coded items leading to lower consistency of scales is quite common throughout the literature [28].

12.2 Evaluation of Study Objectives

Objective 1: This analysis investigated variations in stigma levels on a cultural basis. The analysis revealed that Lithuanian students had somewhat higher mean stigma scores compared to other students. While this difference was not statistically significant ($p = .088$, $t = -1.366$), the pattern suggests a slightly higher cultural influence on stigma among the Lithuanian students. These results could indicate that cultural background might have a mild influence on stigma in regard to the study's sample, though due to the small sample size it is difficult to determine if such differences actually exist.

Objective 2: This involved subgroup analysis to assess whether differences in stigma exist between Lithuanian and other students. As mentioned earlier, the Lithuanian students showed somewhat higher mean stigma scores compared to other students in each of the subgroup (personal and clinical exposure) comparisons, but these differences were not statistically significant ($p = 0.650$ and $p = 0.493$, respectively).

12.2.1. Comparisons with Previous Studies

The overall mean stigma score in this study ($M = 36$) seems slightly higher than those reported in other studies using the 15-item version of the OMS-HC. For example, Modgill's [26] study found a mean

stigma score of 34.2 (SD=6.2) among Canadian medical students, while Chang [29] had similar results by comparing mean stigma of medical (M=34.5, SD=6.4) and nursing (M=36.8, SD=6.1) students in Singapore. Another notable finding comes from a study conducted by Rees [30], who revealed relatively lower levels of stigma among students from the UK (M=31.5, SD=6.5) and Singapore (M=32, SD=5.8). Moreover, final-year students in both schools had the lowest mean stigma scores when compared to all other study years in the sample (London-M=29.8, SD=8.2, Singapore-M=29.9, SD=8.2). These results support the assumption that more extensive clinical exposure is tied to lower levels of stigma. Cultural, educational, and environmental factors - as well as differences in study design - may contribute to disparities in scores. This may also indicate that despite the small sample size, there was still a noticeable difference in mean stigma between our study and several others. For example, our total sample measured higher mean stigma scores compared to Rees's study in the UK and Singapore, suggesting that some cultural effect may be present.

Lithuanian participants in our study did not demonstrate exceptionally high stigma levels compared to other medical students, which contrasts with Winkler's review [17] describing more prevalent stigma in CEE countries compared to the rest of Europe. This discrepancy may reflect ongoing limitations in the current literature for this region, including a lack of recent, region-specific data that could better capture variability in stigma. Moreover, Winkler's claim regarding particularly high public stigma among healthcare professionals, does not distinguish between future (students) and current practitioners, or between mental health specialists and other medical roles - despite evidence that stigma levels varies significantly across these groups [31].

12.2.2. Post-hoc Exploratory Analysis: Age and Stigma

To better understand our results, we reviewed a similar study by Mikonė [32], conducted in a comparable setting within a shared cultural and institutional context. The study used the OMS-HC scale to assess stigma attitudes toward mental illness among doctors and residents at LSMU (N = 355). Notable findings included significantly higher stigma levels among doctors aged 40 and above (M = 64.35, SD = 10.66, Range = 46–100) compared to resident doctors (M = 59.9, SD = 9.92, Range = 46–98). This aligns with the broader trends suggesting that stigma toward mental illness may vary by age [33], with higher levels observed among individuals in their 40s and 50s (also referred to as "Generation X") compared to younger individuals such as Generation Z (aged 12–27). This age-related pattern may help explain why our own sample, composed mainly of younger medical students within a narrower age group, did not show statistically significant differences in stigma scores between Lithuanian and other participants. However,

this interpretation should be viewed with caution, as the age differences in our sample were far smaller compared to those in Mikonė's study.

Although outside the scope of the thesis aim, a post-hoc analysis was performed in response to emerging literature identified after the initial data analysis was completed. The comparison was conducted using independent sample t-tests to explore whether younger age was associated with lower stigma scores. Mean stigma scores were compared based on age-group criteria across all participants, regardless of nationality, using a cutoff at age 25, as it provided the most balanced division of participants within the sample. Students aged 25 or under (M = 36.97, SD = 8.5) had slightly higher stigma scores compared to students over 25 (M = 34.6, SD 7.1), yet the differences between these two groups were not statistically significant ($p = 0.114$, $t = 1.2$). These findings suggest that the narrow age range of our student sample may have been insufficient to detect any meaningful differences in stigma related to age. Further research with more age-diverse samples could clarify the link between younger age and lower stigma levels.

12.3 Limitations

Limitations of this study must be acknowledged when interpreting the findings. First, the modest sample size (N = 70) suggests limited power for the statistical analyses performed. While these results were directionally consistent with our formulated assumptions, it is likely that the sample lacked sufficient power to detect small or moderate differences with statistical accuracy. Thus, Type-II errors (i.e. false negatives) are possible, particularly in subgroup analyses.

The small sample size also revealed significant disparities in relation to key demographic factors - female students made up most of the study sample, and there was an uneven distribution of students from the clinical study years (Years 4 -6) versus students from the pre-clinical study years (1st-3rd). These imbalances might have led to selection bias, which limited the generalizability of the findings to LSMU's larger student population.

Regarding the second hypothesis, personal exposure was initially meant to be analyzed based on the scope of familiarity, but due to the small size only the presence or absence of such exposure was evaluated. As a result, this exposure was measured dichotomously without considering the intensity, nature, or emotional context of the relationship, factors which could greatly influence the effect personal exposure has on stigma.

Regarding the third hypothesis, a methodological limitation emerged with to regards to our definition of "clinical exposure". Rather than measuring this exposure directly, it was assumed based on the student's

academic year. Although other studies across the literature have shown some link associating between higher academic years and lower stigma levels. substantial clinical experience could still be gained through other means, such as shadowing or volunteer work.

Another limitation involved the self-reported nature of our data, which is prone to social desirability, recall, and response biases. Participants might have unconsciously under-reported discriminatory views or to responded in ways they perceived as socially desirable or likable, which may compromise the validity and accuracy of our findings (especially for sensitive topics like mental illness). Furthermore, despite the scale's high consistency (α=0.79), due to time constraints the scale was not formally adapted to Lithuanian language by using a standard procedure, relying on informal forward translation and limited peer review. This could potentially introduce semantic inaccuracies that would affect comparability with other studies.

Finally, the term "other" was used to reference international students, but this term encompasses a culturally diverse group of people from various countries. This broad categorization might overlook meaningful cultural distinctions and differences in attitudes toward mental illness, thereby limiting the interpretability of our comparisons.

13. CONCLUSIONS

The aim of this study was to explore the influence of cultural background and exposure to mental illness on stigma among medical students.

Based on the findings and analysis, the following observations can be made:

1. There was no statistically significant difference in stigma scores between Lithuanian and other students. However, Lithuanian students displayed somewhat higher mean stigma scores compared to other students across all comparisons.
2. Based on exposure criteria, both personal and clinical exposure subgroups showed no statistically significant difference in stigma scores between Lithuanian and other students.

14. PRACTICAL RECOMMENDATIONS

Based on some observable trends noted throughout the literature, several practical recommendations could be considered:

- We recommend introducing anti-stigma programs as early as possible within medical education, as clinical exposure has shown some influence on stigma reduction across the literature. Early interventions have an immense effect in addressing stigma associated with mental illness as more exposure and contact with patients has been linked to lower stigma. These programs should emphasize elements like personal recovery stories and myth-busting to maximize their effectiveness.
- Encourage peer-led discussion groups that provide a safe and open forum for talking about mental health among colleagues. As mentioned earlier, students with prior personal exposure to mental illness tended to report lower stigma. By creating an environment that normalizes discussions about mental health, more empathetic views could develop among students.
- Ensure a more diverse sample in future studies. The limited sample size in this study alongside the overrepresentation of certain demographic groups may have overshadowed considerable differences in stigma levels. Future studies should aim for a more balanced representation based on nationality, gender, and year of study.
- **Repeat the study with a larger sample size** to validate or refute the findings of this thesis. Additionally, further research should use larger, more statistically powered samples.

15. LITERATURE LIST

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