

A Meta-Analysis of Ukrainian and other European Women's Psychological Well-Being Following the Russian Invasion of Ukraine on February 24, 2022

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Abstract. *The meta-analysis described in this paper examined the effects of the Russian invasion of Ukraine on February 24, 2022 on Ukrainian and other European women's psychological well-being because the largest number of Ukrainians who were internally or externally displaced from their homes and communities as a result of the Russian invasion are women. The World Health Organization-Five Item Well-Being Index was the psychological health measure in all the studies in the meta-analysis. The meta-analysis included 7 samples of Ukrainian and other European women (N = 111,438), 36 samples of non-European women residing in world regions not directly affected by the Russian invasion of Ukraine (N = 7,852), and six samples of non-European refugees and asylum seekers residing in different European countries (N = 1,857). The main focus of analysis was the psychological well-being of internally and externally displaced Ukrainian women compared to (a) nondisplaced Ukrainian women, (b) non-European refugee women displaced in different European countries, (c) European women in different regions of Europe, and (d) women residing in other world regions (Latin America and Caribbean, Oceania and South Pacific, and North America). Results showed that the Ukrainian women displaced from their homes and communities had the lowest WHO-5 well-being scores compared to all other European women, including nondisplaced Ukrainian women, and women in other world regions. Results also showed that the WHO-5 well-being scores of non-European refugee women displaced in different European countries were more attenuated compared to all other samples except the displaced Ukrainian women. Secondary analyses yielded inconclusive evidence that European women's psychological well-being was negatively affected by the Russian invasion of Ukraine.*

Keywords: war, Russian invasion, Ukrainian refugees, internally displaced persons, women, psychological well-being, meta-analysis

INTRODUCTION

Trauma is defined as a negative psychological or emotional response to life events characterized by threatening, frightening, or distressing incidents or occurrences (American Psychological Association, 2018). Traumatic event exposure includes, but is not limited to, natural disasters (e.g., earthquakes, hurricanes, floods), physical or sexual

abuse or assault (e.g., rape, battery, molestation), acute or chronic violence (e.g., mass shootings, experiencing or witnessing physical assault), incarceration or imprisonment (e.g., kidnapping or forced confinement, imprisonment), serious accidents or injury (e.g., car crashes, loss of a limb), death of a loved one (e.g., parent, child, friend), pregnancy and birth-related complications (e.g., premature delivery, prenatal loss), pandemics (e.g., COVID-19, EBOLA, HIV/AIDS), and war and conflict (e.g., terror attacks, combat exposure, displacement from home and community).

Trauma and other adverse life events are, unfortunately, part of the human condition (Bromet et al., 2018; Mew et al., 2022). Results from epidemiological studies show that 70% of the general population experience at least one traumatic event during their lifetime (Kessler, 2017). Between one-fourth and one-third of the general population experiences four or more adverse life events during their lifetime (Benject, 2016). Traumatic event exposure is generally associated with a wide range of adverse mental health outcomes and disorders (Carmassi et al., 2024). The psychological responses to traumatic life events include anxiety, helplessness, depression, fear of recurrence, hopelessness, exhaustion, flashbacks, and posttraumatic stress disorder (Center for Substance Abuse Treatment, 2014).

Traumatic event exposure can be either person-specific or affect large groups of persons simultaneously (Carmassi et al., 2024). War and other forms of armed conflict are examples of large groups of people experiencing traumatic life events at the same time (Hirschberger, 2018). Research reviews and meta-analyses of studies of conflict- and war-affected populations consistently show that the mental health of persons who experience armed conflicts is negatively affected (e.g., Ahmed et al., 2024; Carpinello, 2023; Geoffrion et al., 2020; Hoppen et al., 2021; Murthy & Lakshminarayana, 2006; Ostergaard et al., 2023). Hoppen et al. (2021), for example, found that more than half of the 25,000+ participants in the 41 studies in their meta-analysis experienced both major depression and posttraumatic stress disorder. Ahmed et al. (2024) concluded their meta-analysis of 57 studies by stating that “The results of this study provide conclusive evidence of the detrimental impacts of armed conflicts on mental health outcomes” (p. 1).

LITERATURE REVIEW

The Russian invasion of Ukraine on February 24, 2022, was and continues to be a traumatic life event that has affected all or nearly all Ukrainians (Frolova & Silver, 2024). As of December 2024, more than 6.2 million Ukrainian citizens have been displaced from their homes and communities and are now residing in other European host countries (Stratista, 2025). In addition, nearly 5 million Ukrainians have been internally displaced within their own country (Frolova & Silver, 2024). Most of the internally and externally displaced Ukrainians are women and children (Ueffing et al., 2023).

Research reviews of the mental health of Ukrainians following the Russian invasion include results indicating that different dimensions of psychological health and well-being have been negatively affected (Adamczyk et al., 2024; Ahmed et al., 2024; An et al., 2025; Ellis et al., 2024; Fornaro, 2025; Riso, 2024). These reviews, however, do not include results for Ukrainians displaced and not displaced from their homes and communities. Results from other studies show that the mental health status of Ukrainian refugees (externally displaced persons) and internally displaced Ukrainians does not differ from one another (Lushchak et al., 2024; Shyroka et al., 2023) but

that the mental health status of both groups is more negatively affected compared to nondisplaced Ukrainians (Kurapov et al., 2023; Lushchak et al., 2024; Timmer et al., 2023). Rizzi et al. (2023), in their review of Ukrainian refugees and internally displaced persons, concluded that these two groups often “encounter more intense traumatic experiences...(and as a result)...exhibit elevated rates of stress, depression, post-traumatic stress disorder, and other psychiatric issues” compared to nondisplaced Ukrainians (p. 17).

The mental health consequences of the Russian invasion of Ukraine have not been limited to Ukrainian refugees and internally displaced persons (see e.g., Scharbert, 2024). Findings from studies of citizens in different European countries indicate that different dimensions of psychological health were more attenuated following the Russian invasion of Ukraine (see e.g., Kalaitzaki, 2024; Kimhi et al., 2023). Recent results from a study conducted with the general population in most European countries showed that different dimensions of psychological health (anxiety, loneliness, depression, & optimism) were negatively affected following the Russian invasion of Ukraine (Eurofound, 2024).

Particular groups of Europeans appear to have been at higher risk for poor psychological health outcomes as a result of the Russian invasion of Ukraine. Findings from studies of two groups of Europeans in particular include evidence that the psychological well-being of persons in these groups was more negatively affected by the Russian armed conflict: (1) Citizens in countries bordering Ukraine or Russia (Chudzica-Czupala et al., 2023; Kalaitzaki, 2024; Koubova & Kimhi, 2024) and (2) citizens in countries with large or disproportionate numbers of Ukrainian refugees (Kimhi et al., 2023). The results from these studies, however, need to be considered preliminary because of methodological and other study-related factors. For example, Kalaitzaki (2024) concluded that the psychological health of persons in countries bordering Ukraine (Poland & Romania) was more negatively affected compared to persons in more “distal countries.” This conclusion, however, may not be warranted because the distal countries in the study included both European countries (Greece & Italy) and countries in six other parts of the world (e.g., Chile, Kazakhstan, Oman, & Taiwan). The same is the case for the results reported by Chudzica-Czupala et al. (2023), who compared the psychological health of Polish and Taiwanese citizens.

The meta-analysis described in this paper builds on and expands upon the research described above and elsewhere (e.g., Fornaro, 2025) by analyses that permit more precise estimates of the effects of the Russian invasion on displaced and nondisplaced Ukrainian women and women in other European countries. The meta-analysis is part of a larger research synthesis of the effects of different traumatic and adverse life events and experiences (e.g., COVID-19, prenatal loss, natural disasters) on women’s psychological well-being in different countries and world regions. The results reported in this paper address the following methodological and procedural concerns identified in previous studies as part of the analyses of the effects of the Russian invasion of Ukraine on women’s psychological health in Europe and other regions of the world.

First, although the largest number of displaced Ukrainians are women, few studies have reported results separately for female and male study participants. Attention to this matter is necessary since studies of the psychological health of both Ukrainians and other Europeans following the Russian invasion indicate that women’s psychological health is more negatively affected compared to men (Buchcik et al., 2023; Kang et al., 2024; Martsenkovskiy et al., 2024; Tavrovestska & Veldbrekht, 2022). Therefore, the meta-analysis described herein focused only on the psychological health of female study participants.

Second, results from studies that include claims about the heightened negative effects of the Russian invasion on citizens in countries bordering Ukraine are confounded by the fact that the comparison countries are not in Europe (Chudzica-Czupala et al., 2023) or comparisons include countries both in Europe and other parts of the world (Kalaitzaki, 2024). The one exception is a study by Kimhi et al. (2023), where the results indicated that “Ukrainian respondents reported the highest levels of...distress symptoms and the lowest level of well-being compared to the population of the five nearby European countries” (p. 1005). None of these studies, however, includes data necessary to determine if the “distance from” Ukraine or countries bordering Ukraine or Russia matters in terms of the effects of the armed conflict on the psychological health of citizens in different European countries. Both of these concerns were evaluated in the meta-analysis in this paper by operationalizing the proximity to the Ukraine-Russian frontline in different ways and determining if the “distance from the frontline” affected the psychological health of women in different regions of Europe.

Third, whether the number of Ukrainian refugees in different European countries has disproportionately affected the psychological health of native-born citizens has, surprisingly, not been an explicit focus of investigation. Findings reported by Ikizler et al. (2020) indicate that a large influx of migrants into a country negatively affects the psychological health of a native-born population. Data compiled by Stratista (2025) indicates that three central European countries (Germany, Poland, and the Czech Republic) have admitted 2.5 million Ukrainian refugees since the Russian invasion, the most of any region in Europe. Data compiled by People in Need (2025) show that certain European countries have admitted a disproportionate number of Ukrainian refugees, as measured by the number of refugees per 1000 inhabitants in a country (Czech Republic, Estonia, Poland, Latvia, and Ireland). Neither of these metrics, however, has been used to determine if these population-based measures are related to European women’s psychological health.

Fourth, comparisons of findings reported in different studies of Ukrainian and other European women’s psychological health are confounded by the fact that different scales and measurement instruments have been used to assess different dimensions of psychological health (compare, e.g., Kalaitzaki, 2024; Kimhi et al., 2023). This methodological concern was addressed in the present study by only including studies that used the World Health Organization-Five Item Well-Being Index scale (World Health Organization, 1998) to measure psychological health to be able to make direct comparisons between samples of women in different European countries and in other world regions. The WHO-5 is widely used to measure positive indicators of psychological health and well-being (McDowell, 2010; Topp et al., 2015) and has well-established psychometric properties (Topp et al., 2015).

Aims of the Study

The meta-analysis was designed to answer four primary research questions (PRQs) and six secondary research questions (SRQs) to determine if the psychological well-being (PWB) of Ukrainian women, other European women, and women in other world regions differed following the 2022 Russian invasion of Ukraine. The four primary research questions were:

PRQ-1: Do the PWB of displaced and nondisplaced Ukrainian women differ?

PRQ-2: Does the PWB of displaced Ukrainian women differ from the PWB of women in other European countries?

PRQ-3: Does the PWB of nondisplaced Ukrainian women differ from the PWB of women in other European countries?

PRQ-4: Does the PWB of displaced Ukrainian women differ from the PWB of non-European refugee women displaced in different European countries?

The six secondary research questions were:

SRQ-1. Is the PWB of women in different regions of Europe similar or different?

SRQ-2: Does the number of Ukrainian refugees in European host countries affect the PWB of women in those countries?

SRQ-3: Does the number of Ukrainian refugees per 1000 residents in European host countries affect the PWB of women in those countries?

SRQ-4: Does the distance from the Ukraine-Russia border affect the PWB of women in different European host countries?

SRQ-5: Does the PWB of women in countries bordering Ukraine or Russia differ from the PWB of women in other European countries?

SRQ-6: Does the PWB of European women differ from the PWB of women in other regions of the world?

SEARCH METHOD

Standard guidelines were used to identify, select, and appraise the results in the WHO-5 studies (Siddaway et al., 2019). The American Psychological Association reporting standards were used to prepare and describe the results of the meta-analysis (Appelbaum et al., 2018).

Search Strategy

Five primary (PsycNet, PubMed, ProQuest Central, ProQuest Dissertations and Theses, and Google Scholar) and six secondary (Google, JSTOR, DOAJ, BASE, CORE, and Research Gate) databases were searched for WHO-5 well-being studies. Controlled vocabulary, keyword, and natural language searches were used in the primary database searches, and keyword and natural language searches were used in the secondary database searches. Initial searches were conducted in June and July 2024. Updated searches were conducted in March and April 2025.

An iterative search strategy was used to locate studies that used the WHO-5 Well-Being Index to measure women's psychological health. First, the terms "World Health Organization-Five", "World Health Organization-5," "WHO-Five", "(WHO)-5", and "WHO-5" were each used together with "well-being OR well being OR wellbeing" to locate any study that used the WHO-5 well-being scale to measure women's psychological health. Second, because different investigators used different terms to describe the WHO-5, the terms "index OR scale OR instrument OR measure OR questionnaire" were added to each of the above well-being search combinations. Third, studies of only or primarily female study participants were located by adding "women OR female" to each of the above searches.

WHO-5 studies of European women were located by adding “Europ*” and the names of each of the 27 European Union and Candidate countries (e.g., Bosnia and Herzegovina, North Macedonia, Turkey) and non-European Union countries (e.g., Iceland, Norway, Switzerland, the United Kingdom) to locate relevant studies. WHO-5 studies of non-European women were identified by searches for studies conducted in North America (Canada, United States), Latin America and the Caribbean (e.g., Argentina, Brazil, Cayman Islands, Jamaica), and Oceania and the South Pacific (e.g., Australia, Fiji, Micronesia, Philippines, New Zealand). The searches for studies in Latin America and the Caribbean included the WHO-5 searches above and the names of each of the 30+ countries in this region of the world. The searches for studies in Oceania and the South Pacific included the WHO-5 searches above and the names of each of the 20+ countries in this region of the world. WHO-5 studies of non-European women displaced in different European countries included the WHO-5 searches above and “refugees OR asylum seekers OR displace*” as search terms.

Inclusion and Exclusion Criteria

European Women

Studies of European women were included if (1) the WHO-5 Well-Being Index was used to measure psychological health, (2) the WHO-5 well-being scale was administered in the two years following the Russian invasion of Ukraine (March 1, 2022-February 28, 2024), (3) the five-item version of the scale was used where each item was scored on a 6-point rating scale ranging from at-no-time to all-of-the-time, (4) 68% or more of the study participants were female, (5) the majority of study participants were between 18 and 65 years of age, and (6) the study participants resided in a European country at the time of data collection.

Studies were excluded if (1) the WHO-5 scoring procedure was altered, (2) the WHO-5 results were reported only in terms of the percentage of study participants who scored above and below a designated cutoff score, (3) fewer than 68% of the participants were female, (4) the study participants were primarily adolescents, (5) the study participants had an established clinical diagnosis before the Russian invasion (e.g., depression, post-traumatic stress disorder), (6) and the study participants were not residing in a European country at the time of data collection.

Non-European Women

The same inclusion and exclusion criteria were used for identifying studies of non-European women residing in Latin America or the Caribbean, Oceania or the South Pacific, and North America during the two years following the Russian invasion of Ukraine.

Non-European Refugee Women in Europe

The criteria for including studies of non-European refugee women displaced in a European country had to be relaxed because no studies were located for the two years following the Russian invasion of Ukraine or the two years during the COVID-19 pandemic. Studies of non-European women displaced in Europe were included if the

women were forcefully displaced or chose to immigrate from their home countries, the WHO-5 well-being scale data collection occurred between 2015 and 2020, and the above inclusion criteria were met.

METHODOLOGY

Data Preparation

The WHO-5 well-being scale includes five items where respondents are asked to indicate the extent to which they experienced different positive feelings during the past two weeks. These feelings include, for example, “I have felt calm and relaxed”, “I have felt active and vigorous”, and “My daily life has been filled with things that interest me”. Each item is rated on a 6-point scale ranging from I have experienced each of the five scale items and are scored “at no time” (zero) to “all of the time” (five) during the past two weeks.

The mean WHO-5 well-being score in each study was the psychological health measure in the meta-analysis. The score was computed as the sum of the ratings of the five scale items, scored zero to five, multiplied by 4 to obtain a total scale score ranging from zero to 100 (World Health Organization, 2024). In studies where the WHO-5 was scored on a 6-point scale ranging from one to six, the scores were recoded so that the raw scores ranged from zero to 25 before obtaining a total scale score (Kozina, 2024; Rozman et al., 2024; Skalski-Bednarz et al., 2022).

Weighted Average WHO-5 Well-Being Scores

The weighted average WHO-5 scores for different groups of studies were used to obtain the best estimates of women’s psychological well-being. The weighted well-being scores were computed for the studies of displaced (refugee) Ukrainian women, nondisplaced Ukrainian women, and women in six different European Regions (Eastern Europe, Nordic Countries, Balkan Countries, Central Europe, Southern Europe, and Western Europe). The sample sizes in individual studies were used to compute the weighted average WHO-5 well-being score estimates. The same procedure was used to obtain the weighted average WHO-5 well-being scores for women in Latin America and the Caribbean, Oceania and the South Pacific, North America, and non-European refugee women displaced in Europe.

Publication Bias

Publication bias was assessed by regressing the weighted average WHO-5 well-being scores on the type of research report (peer-reviewed vs. non-peer-reviewed) to determine if the amount of variance explained in the well-being scores was small enough to ascertain no publication bias (Sanchez-Tojar et al., 2020). Meta-regression was used to test for publication bias by weighting the relationship between the predictor (type of research report) and dependent (well-being scores) measures by the study sample sizes. Publication bias was assessed for the studies of both European and non-European women who were administered the WHO-5 well-being scale after the Russian invasion of Ukraine.

Between-Group Effect Size Comparisons

Cohen's d effect sizes were used to determine if the weighted average WHO-5 well-being scores for different groups of studies differed from one another. Cohen's d was calculated as the difference between two between-group weighted average WHO-5 well-being scores divided by the pooled standard deviation of the two mean scores ($d = [\text{Mean}_{\text{Group 1}} - \text{Mean}_{\text{Group 2}}] / \text{SD}_{\text{pooled}}$) (Lipsey & Wilson, 2001).

Guidelines for non-experimental social sciences research effect size interpretation consider a Cohen's d between .10 and .19 as very small, a d between .20 and .49 as small, a d between .50 and .79 as medium, a d between .80 and 1.20 as large, and a d greater than 1.20 as very large (e.g., Lovakov & Agadullina, 2021; Rosenthal, 1996; Sawilowsky, 2009). The 95% confidence intervals for the Cohen's d effect sizes were used to determine the precision of the weighted average effect sizes. The 95% confidence intervals were calculated as the Cohen's d effect size for two comparative groups $\pm (1.96 \times \text{pooled standard error})$ (Marfo & Okyere, 2019). Nonoverlapping confidence intervals for two comparative group effect sizes indicate that the between-group differences are statistically significant at the .05 level (Cumming, 2009). A confidence interval including zero indicates that the effect size for the difference in two mean scores is not statistically significant at the 0.05 level (Lovakov & Agadullina, 2021).

Meta-Regression Analyses

Meta-regression was used to determine if two different population-based measures (number of Ukrainian refugees in a host country and number of Ukrainian refugees per 1000 inhabitants in a host country) and two different distance-based measures (Ukrainian or Russian border country and the distance between the Ukraine-Russia border and different European countries) were related to differences in the weighted average WHO-5 well-being scores. Table 1 shows the countries and measures used in the meta-regression analyses of the population- and distance-based measures.

SEARCH RESULTS

Studies

The search results identified 36 studies that included 74 independent samples of European women administered the WHO-5 well-being scale following the Russian invasion of Ukraine. The 74 samples included 111,438 participants from 30 different European countries. The 74 samples were considered separate studies in the meta-analysis.

Twenty-six (26) studies were located that included 36 independent samples of non-European women residing in the three world regions described above and not directly affected by the Russian invasion of Ukraine. The 36 samples included 7,852 participants from 14 different countries. The 36 samples were considered separate studies in the meta-analysis

Table 1. Distance-Based and Population-Based Measures Used in the Meta-Regression Analyses of the Weighted WHO-5 Well-Being Index Scores in Different European Countries

| Countries | No. of Study Samples | Distance Measures | | Population Measures | |
|-------------------------|----------------------|---|--|--|---|
| | | Ukraine or Russia Border Country ^a | Distance from Ukraine-Russia Border ^b | Total No. of Ukrainian Refugees ^c | No. of Refugees per 1000 Inhabitants ^d |
| Eastern Europe | | | | | |
| Lithuania | 4 | Yes | 914 | 43,905 | 15.1 |
| Estonia | 1 | Yes | 1285 | 35,915 | 27.1 |
| Latvia | 1 | Yes | 1127 | 48,460 | 24.5 |
| Nordic Countries | | | | | |
| Sweden | 2 | No | 1593 | 43,805 | 3.0 |
| Norway | 1 | No | 1955 | 70,800 | 13.6 |
| Denmark | 1 | No | 1706 | 33,900 | 6.1 |
| Finland | 1 | Yes | 1360 | 63,000 | 12.0 |
| Iceland | 1 | No | 3741 | 4,475 | 9.8 |
| Balkan Countries | | | | | |
| Romania | 4 | Yes | 974 | 77,900 | 8.5 |
| Slovenia | 3 | No | 1672 | 11,700 | 5.7 |
| Croatia | 2 | No | 1578 | 25,800 | 6.7 |
| Bulgaria | 1 | No | 1274 | 62,700 | 10.2 |
| Moldova | 1 | Yes | 638 | 123,295 | 47.3 |
| Central Europe | | | | | |
| Germany | 10 | No | 1611 | 1,178,610 | 13.0 |
| Hungary | 5 | Yes | 1282 | 60,620 | 6.5 |
| Poland | 4 | Yes | 1101 | 957,505 | 25.9 |
| Austria | 2 | No | 1452 | 77,280 | 8.8 |
| Czech Republic | 1 | No | 1573 | 353,510 | 34.9 |
| Slovakia | 1 | Yes | 1404 | 122,925 | 23.3 |
| Southern Europe | | | | | |
| Italy | 2 | No | 2038 | 170,925 | 2.9 |
| Portugal | 2 | No | 3761 | 61,805 | 5.0 |
| Spain | 2 | No | 3257 | 202,690 | 4.3 |
| Turkey | 2 | No | 1756 | 38,735 | 0.4 |
| Malta | 1 | No | 2354 | 2,470 | 4.8 |
| Western Europe | | | | | |
| United Kingdom | 3 | No | 2575 | 244,560 | 3.6 |
| France | 2 | No | 2427 | 66,640 | 1.0 |
| Ireland | 1 | No | 2925 | 108,540 | 21.4 |
| Belgium | 1 | No | 2246 | 80,495 | 6.9 |
| The Netherlands | 1 | No | 2206 | 114,380 | 6.6 |

^aCountries bordering Russia to the east and Ukraine to the west and southwest. ^bComputed as the air distance between the Ukraine-Russia border and the capital of each European country in kilometers. ^cNumber of Ukrainian refugees in the host countries as of mid-year 2024 (<https://www.peopleinneed.net/the-ukrainian-refugee-crisis-current-situation>). ^dNumber of Ukrainian refugees per 1000 inhabitants in each host country at the end of 2024 (<https://www.stratista.com/statistics/1312584/ukrainian-refugees-by-country/>).

Four studies were located that included six independent samples of non-European refugee women who were displaced in a European country before the Russian invasion of Ukraine (Alexander et al., 2021; Gerber et al., 2023; Karyotaki et al., 2023; Kaufmann et al., 2022). The six samples included 1,857 study participants. Most of the non-European women were refugees or asylum seekers from Syria (66%) or Sub-Saharan Africa (30%).

Appendix A lists the study samples in the meta-analysis, the type of research report (peer-reviewed or non-peer-reviewed) for each study, the number and percentage of female study participants, and the participants' ages (Means, SDs, and Ranges). The mean WHO-5 well-being scores and standard deviations for each sample are included in Appendix B.

Study Participants

European Women

Table 2 shows the background characteristics of the studies and study participants of European women who were administered the WHO-5 following the Russian invasion of Ukraine. Two-thirds of the studies were conducted in 2022, and 30% were conducted in 2023. Fifty-seven percent of the research reports (57%) were published in peer-reviewed journal articles, and 43% were located in unpublished, non-peer-reviewed research papers and reports. Eleven studies were conducted in Ukraine (16%). The number of studies in six different European regions ranged between six in Eastern Europe and 18 in Central Europe.

Two-thirds of the studies had 90% or more female study participants. Half of the study participants were 20 to 35 years of age. There were no differences in the percentage of female study participants, $F(6, 67) = 0.86, p = .530$, or the age of the study participants, $F(6, 67) = 1.09, p = .375$, for the six between European region comparisons (Table 2). One-third of the studies (36%) included between 101 and 500 study participants. Nearly two-thirds of the studies (64%) included 500 or fewer study participants.

The two Ukrainian samples included 1187 displaced and 1531 nondisplaced women (Appendix A). Four studies included six samples of displaced (refugee) Ukrainian women (Asanov et al., 2023; Espe-Sherwindt et al., 2025; Sarwar & Mustafa, 2023; Skalski-Bednarz et al., 2022). The women were displaced in 19 different European host countries. Two-thirds of the refugees (68%) were displaced in Poland (N = 526), Germany (N = 140), the Czech Republic (N = 45), Slovakia (N = 29), Italy (N = 17), Spain (N = 17), Norway (N = 15), and Ireland (N = 14). Two hundred and fifty (250) Ukrainian women were internally displaced.

Table 2. Selected Characteristics of the Seventy-Four Samples of European Women Completing the WHO-5 Well-Being Index Following the 2022 Russian Invasion of Ukraine

| Study Characteristics | Number of Studies | Percentage of Studies |
|--------------------------------------|-------------------|-----------------------|
| Year of Data Collection | | |
| 2022 | 46 | 62.2 |
| 2023 | 28 | 37.8 |
| Type of Research Report | | |
| Peer Reviewed | 44 | 59.5 |
| Not Peer Reviewed | 30 | 40.5 |
| Region | | |
| Ukraine | 11 | 14.9 |
| Eastern Europe | 6 | 8.1 |
| Nordic Countries | 6 | 8.1 |
| Balkan Countries | 11 | 14.9 |
| Central Europe | 23 | 31.0 |
| Southern Europe | 9 | 12.1 |
| Western Europe | 8 | 10.9 |
| Number of Study Participants | | |
| 10-100 | 20 | 27.0 |
| 101-500 | 27 | 36.5 |
| 501-1000 | 10 | 13.5 |
| 1001-5000 | 10 | 13.5 |
| 5001+ | 7 | 9.5 |
| Percent of Female Study Participants | | |
| 72-79 | 13 | 17.6 |
| 80-89 | 11 | 14.8 |
| 90-99 | 15 | 20.3 |
| 100 | 35 | 47.3 |
| Mean Participant Age (Years) | | |
| 20-25 | 17 | 23.0 |
| 26-30 | 18 | 24.3 |
| 31-35 | 7 | 9.5 |
| 36-40 | 10 | 13.5 |
| 41-45 | 14 | 18.9 |
| 46-50 | 4 | 5.4 |
| 50-55 | 4 | 5.4 |

Four studies included five samples of nondisplaced Ukrainian women (Asanov et al., 2023; HIAS Foundation, 2023; Owoc et al., 2024; Quaranta-Leech, 2024). Two samples included participants from most regions throughout Ukraine (Asanov et al., 2023; HIAS Foundation, 2023), and three samples included participants residing primarily in western Ukraine (Owoc et al., 2024; Quaranta-Leech, 2024). The HIAS Foundation (2023) samples included approximately 120 participants who had been displaced from their homes following the Russian invasion but who were residing in their home communities at the time of data collection

Non-European Women

Comparative analyses between the samples of European and non-European women residing in world regions not directly affected by the Russian invasion of Ukraine (Latin America, Oceania, North America) found no differences for the year of data collection, $X^2 = 0.17$, $df = 1$, $p = .678$, type of research report, $X^2 = 0.12$, $df = 2$, $p = .725$, or participants' ages, $F(1, 96) = 0.95$, $p = .332$. The two groups did differ in terms of the percentage of samples that included female study participants, $F(1, 96) = 12.55$, $p = .001$. The average percentage of female study participants was 98.06 (SD = 4.05) for the European women and 81.82 (SD = 10.93) for the non-European women. Comparisons between the WHO-5 well-being scores for the two groups of women were adjusted for the differences in the percentages of female study participants.

Non-European Refugee Women

Comparative analyses between the samples of Ukrainian and non-European women refugees displaced in different European countries were performed using Fisher's Exact Test for small sample sizes (Siegel & Castellan, 1988). There were no differences between groups for the study sample sizes, $p = .567$, or the percentage of study samples that were female participants, $p = .716$. The two groups did differ in terms of the months displaced from their home community or country, $p = .015$. The weighted average number of months the Ukrainian women were displaced was $M = 4.91$ (SD = 1.62), and the weighted average number of months the non-European women were displaced in different European countries was $M = 29.41$ (SD = 8.25). Comparisons between the weighted average WHO-5 well-being scores for the two groups were adjusted for the differences in months displaced from their home community or country.

Publication Bias

The weighted average WHO-5 well-being scores regressed on the type of research report (peer-reviewed vs. not-peer-reviewed) for both the European and non-European women completing the WHO-5 well-being scale after the Russian invasion of Ukraine accounted for only $R^2 = .023$ variance in the well-being scores after adjusting for the differences in the percentage of female study participants (Song et al., 2013). The result indicates minimal differences in the weighted average WHO-5 well-being scores for the peer-reviewed ($M = 48.62$, SD = 4.95) and non-peer-reviewed ($M = 48.35$, SD = 6.29) research reports.

META-ANALYSIS RESULTS

European Women's WHO-5 Well-Being Index Scores

Table 3 shows the weighted average WHO-5 well-being scores for the two groups of Ukrainian studies and the six groups of European region studies. The weighted average WHO-5 well-being scores for the eight groups of studies are ordered from the smallest (Displaced Ukrainian women) to the largest (Nordic country women). The 95% confidence intervals for each of the weighted average WHO-5 well-being scores are a reasonable estimate of the true average scores for each of the different groups of studies. Inasmuch as precision increases as the width

of confidence intervals decreases, the results provide evidence that there is little heterogeneity in the weighted average WHO-5 well-being scores for any of the eight groups of studies (Higgins et al., 2019).

Table 3. Weighted Average WHO-5 Psychological Well-Being Index Scores for the Eight Samples of European Women

| European Countries/Regions | k | N | Mean | SE | 95% CI |
|----------------------------|----|-------|-------|------|--------------|
| Displaced Ukrainians | 6 | 1187 | 38.33 | 0.15 | 38.04, 38.63 |
| Western Europe | 8 | 37566 | 46.13 | 0.01 | 46.10, 46.15 |
| Southern Europe | 9 | 7468 | 46.95 | 0.07 | 46.80, 47.09 |
| Central Europe | 23 | 28870 | 47.65 | 0.03 | 47.58, 47.72 |
| Eastern Europe | 6 | 4913 | 47.76 | 0.04 | 47.68, 47.84 |
| Nondisplaced Ukrainians | 5 | 1531 | 48.66 | 0.25 | 48.16, 49.16 |
| Balkan Countries | 11 | 9999 | 51.33 | 0.06 | 51.21, 51.46 |
| Nordic Countries | 6 | 19904 | 52.14 | 0.01 | 52.12, 52.16 |

NOTES. k = Number of study samples, N = Number of female study participants in the k study samples, SE =Standard error of the weighted average WHO-5 scores, and CI = Confidence interval.

Between-Group Comparisons

The Cohen's *d* effect sizes and their 95% confidence intervals for the 28 between-group comparisons for the different samples of European women are shown in Table 4. Several discernible patterns are evident in the results for both the two Ukrainian groups of studies and the six groups of studies for the other European women.

Ukrainian Women Samples

The Cohen's *d* sizes of effect for the displaced Ukrainian women and each of the other groups of studies, including the nondisplaced Ukrainian women, are all very large, ranging from 1.30 to 3.61. Results shown in Table 3 indicate that the weighted average WHO-5 well-being score for the displaced Ukrainian women is considerably smaller than the weighted average WHO-5 well-being scores for each of the other six groups of studies.

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Table 4. Cohen's d Effect Sizes and 95% Confidence Intervals (CI) for the Between-Group Weighted Average WHO-5 Well-Being Index Score Comparisons

| Countries/Regions | Effect Size Estimates | Nondisplaced Ukrainians | Southern Europe | Central Europe | Western Europe | Eastern Europe | Balkan Countries | Nordic Countries |
|-------------------------|-----------------------|-------------------------|-----------------|----------------|----------------|----------------|------------------|------------------|
| Displaced Ukrainians | Cohen's d | 1.30 | 1.44 | 1.71 | 1.96 | 2.25 | 2.26 | 3.61 |
| | 95% CI | 0.73, 1.87 | 1.11, 1.77 | 1.41, 2.01 | 1.68, 2.24 | 1.95, 2.55 | 1.94, 2.58 | 3.33, 3.89 |
| Nondisplaced Ukrainians | Cohen's d | | 0.20 | 0.12 | 0.35 | 0.12 | 0.32 | 0.49 |
| | 95% CI | | -0.32, 0.72 | -0.38, 0.62 | -0.15, 0.85 | -0.39, 0.63 | -0.19, 0.83 | -0.01, 0.99 |
| Southern Europe | Cohen's d | | | 0.11 | 0.17 | 0.16 | 0.68 | 1.09 |
| | 95% CI | | | -0.05, 0.27 | 0.08, 0.26 | -0.0, 0.33 | 0.49, 0.87 | 0.94, 1.24 |
| Central Europe | Cohen's d | | | | 0.35 | 0.02 | 0.61 | 1.06 |
| | 95% CI | | | | 0.28, 0.42 | -0.09, 0.13 | 0.54, 0.68 | 1.02, 1.10 |
| Western Europe | Cohen's d | | | | | 0.62 | 1.10 | 3.04 |
| | 95% CI | | | | | 0.55, 0.69 | 0.98, 1.22 | 3.01, 3.06 |
| Eastern Europe | Cohen's d | | | | | | 0.73 | 1.82 |
| | 95% CI | | | | | | 0.58, 0.88 | 1.69, 1.91 |
| Balkan Countries | Cohen's d | | | | | | | 0.18 |
| | 95% CI | | | | | | | 0.06, 0.30 |

The effect size results for the nondisplaced Ukrainian women show that the weighted average WHO-5 well-being score is much the same as those for the other six different groups of European women. The similarity in the scores is evident by the fact that the confidence intervals for the Cohen's *d* effect sizes for the six between-group comparisons all include zero. Examination of the weighted average WHO-5 well-being scores in Table 3 shows that the weighted average well-being score for the nondisplaced Ukrainian women is only a few points different than the scores for the other groups of studies.

Ukrainian and Non-European Refugee Comparisons

The results from the comparisons between the displaced Ukrainian women and women refugees and asylum seekers from non-European countries displaced in Europe are shown in Table 5. The results for the unadjusted WHO-5 well-being scores show that displacements of 5 months, on average, are associated with smaller well-being scores for Ukrainian women compared to the unadjusted WHO-5 well-being scores for non-European women displaced for 30 months, on average, in different European countries. In contrast, the weighted average WHO-5 well-being scores for the Ukrainian and non-European women are reversed after the well-being scores are adjusted for differences in the months women are displaced from their home communities and countries. The adjusted weighted WHO-5 well-being scores for the two groups of displaced women differ significantly at the .05 level as evidenced by non-overlapping confidence intervals.

Table 5. Weighted Average WHO-5 Well-Being Index Scores for the Ukrainian and Non-European Women Refugees Displaced in Different European Countries

A

| Displaced Refugee Samples | Mean Months Displaced ^a | Weighted Average WHO-5 Well-Being Scores | | | | |
|------------------------------------|------------------------------------|--|------|-------|------|--------------|
| | | k | N | Mean | SE | 95% CI |
| Unadjusted WHO-5 Scores | | | | | | |
| Ukrainian Women | 4.91 | 6 | 1187 | 38.33 | 0.15 | 38.04, 38.63 |
| Non-European Women ^b | 29.41 | 6 | 1857 | 43.37 | 0.16 | 43.05, 43.69 |
| Adjusted WHO-5 Scores ^c | | | | | | |
| Ukrainian Women | 19.85 | 6 | 1187 | 46.23 | 0.19 | 45.16, 46.76 |
| Non-European Women | 19.85 | 6 | 1857 | 38.32 | 0.27 | 37.95, 38.69 |

NOTES. k = Number of the study samples, N = Number of female study participants in the k study samples, SE = Standard error of the weighted average WHO-5 scores, CI = Confidence interval.

^aWeighted means for the months displaced in different European countries. ^bCountries of origin of the non-European women were primarily the Middle East (66%) and Sub-Saharan Africa (30%). Sixty-three percent of the non-European women were Syrian refugees. ^cThe weighted average WHO-5 scores adjusted for the differences in the number of months displaced in different European countries.

comparison of both the unadjusted and adjusted WHO-5 well-being scores for the European and non-European women displaced in different European countries (Table 5) with the WHO-5 well-being scores for different groups of European women (Table 3) shows that the weighted average WHO-5 well-being scores for both groups of displaced women in all but one comparison are statistically different from the weighted WHO-5 well-being scores for the different groups of European women (including nondisplaced Ukrainian women) as evidenced by nonoverlapping confidence intervals. In all of the comparisons, the WHO-5 well-being scores for the displaced European and non-European women are smaller than those for the different groups of European women.

There was only one study of non-European refugee women who were displaced in a European country for less than 6 months (Kaufmann et al., 2022). The mean WHO-5 well-being score for this study sample was $M = 36.40$, $95\% \text{ CI} = 32.39, 40.41$, which is almost identical to the weighted average WHO-5 well-being score for the six samples of Ukrainian women displaced from their homes and communities, $M = 38.33$, $95\% \text{ CI} = 38.04, 38.62$. The overlapping confidence intervals for the two average scores indicate that the WHO-5 well-being scores for the two samples of study participants are more similar than different.

European Women Samples

The effect size results for the comparisons between the six different European regions shown in Table 4 yielded three distinct patterns in the data. First, the sizes of effect for the comparisons between the Nordic countries and the other five groups of studies show that 4 of the 5 effect sizes are very large for the between-region comparisons. In all cases, the weighted average WHO-5 well-being score for the Nordic samples is larger than the weighted average WHO-5 well-being scores for all the other groups of studies (Table 3).

Second, the sizes of effect for the comparisons between the Balkan countries and the other four groups of studies show that 3 of the 4 effect sizes are medium and one effect size is large. In all cases, the weighted average WHO-5 well-being scores for the Balkan countries is larger than the weighted WHO-5 well-being scores for the other groups of studies.

Third, the comparisons between the WHO-5 well-being scores for the other four European regions, with only one exception, show that the sizes of effect for the between-group comparisons are small or very small. The results indicate that the weighted average WHO-5 well-being scores for women in the western, eastern, central, and southern European regions are much the same.

Population- and Distance-Based Measure Analyses

The results from the meta-regression analyses of the relationships between the two population- and two distance-based measures and European women's WHO-5 well-being scores are shown in Table 6. Two of the four predictor variables showed small but discernible relationships with the women's WHO-5 well-being scores. The number of Ukrainian refugees in a European country, but not the number of Ukrainian refugees per 1000 inhabitants, accounted for a small amount of variance in women's WHO-5 well-being scores. The more Ukrainian refugees in a host European country, the more attenuated were the women's well-being scores as evidenced by the negative standardized beta coefficient. The distance from the Ukrainian-Russian border, but not the proximity to either country, accounted for a small amount of variance in the WHO-5 well-being scores. The more distant a country was from the Ukraine-Russian border, the more attenuated were the women's well-being scores as evidenced by the negative standardized beta coefficient.

Table 6. Meta-Regression Analysis Results for the Relationships Between the Population and Distance Measures and the Weighted WHO-5 Well-Being Index Scores

| Predictor Variables | R ² | B | t (df) | p-value |
|---|----------------|-------|-----------------|---------|
| Population-Based Measures | | | | |
| Number of Refugees Per 1000 Inhabitants | .006 | -.086 | 25.26 (108,718) | <.001 |
| Number of Refugees in a Host Country | .013 | -.114 | 37.79 (108,718) | <.001 |
| Distance-Based Measures | | | | |
| Distance From Ukraine-Russia Border | .040 | -.199 | 67.09 (108,718) | <.001 |
| Ukraine or Russia Border Country | .002 | .041 | 13.41 (108,718) | <.001 |

NOTE. *B* is the standardized beta coefficient for the relationship between the predictor variables and the weighted WHO-5 Well-Being Index Scores.

European and Non-European Women Group Comparisons

The weighted average WHO-5 well-being scores for the European and non-European women adjusted for differences in the percentage of female study participants are shown in Table 7. The weighted average WHO-5 well-being score for the six samples of European women, taken together, was 48.62, 95% CI = 48.57, 48.64, and the weighted average WHO-5 score for the three samples of non-European women, taken together, was 48.35, 95% CI = 48.21, 48.49. The Cohen's *d* effect size for the between-group comparison was *d* = 0.05, 95% CI = -0.01, 0.11. The effect size is negligible, where the result indicates no discernible difference in the weighted average WHO-5 well-being scores for the two groups of studies for all samples combined, as evidenced by a confidence interval including zero.

Table 7. Weighted Average WHO-5 Psychological Well-Being Index Scores for Women in Different World Regions Following the 2022 Russian Invasion of Ukraine Adjusted for Differences in the Percent of Female Study Participants

| World Regions/Countries | Percent | | N (Female) | Mean | SE | 95% CI |
|---------------------------|-----------|-----------|---------------|--------------|-------------|---------------------|
| | Female | k | | | | |
| European Women | 98 | 63 | 108720 | 48.62 | 0.02 | 48.57, 48.64 |
| Western Europe | 99 | 8 | 37566 | 46.68 | 0.02 | 46.63, 46.72 |
| Southern Europe | 98 | 9 | 7468 | 46.87 | 0.06 | 46.78, 46.96 |
| Central Europe | 98 | 23 | 28870 | 47.81 | 0.02 | 47.76, 47.86 |
| Eastern Europe | 99 | 6 | 4913 | 48.28 | 0.06 | 48.17, 48.39 |
| Balkan Countries | 98 | 11 | 9999 | 51.33 | 0.06 | 51.21, 51.46 |
| Nordic Countries | 99 | 6 | 19904 | 52.77 | 0.03 | 52.71, 52.83 |
| Non-European Women | 82 | 36 | 7852 | 48.35 | 0.07 | 48.21, 48.49 |
| North America | 82 | 11 | 2434 | 42.09 | 0.09 | 42.09, 42.45 |
| Oceania/South Pacific | 88 | 16 | 2683 | 50.45 | 0.08 | 50.28, 50.61 |
| Latin America/Caribbean | 76 | 9 | 2735 | 51.30 | 0.10 | 51.14, 51.79 |

NOTES. *k* = Number of study samples, *N* = Number of female study participants in the *k* study samples, *SE* = Standard error of the weighted average WHO-5 scores, and *CI* = Confidence interval.

DISCUSSION

The meta-analysis described in this paper examined the consequences of the Russian invasion of Ukraine on February 22, 2022, on Ukrainian and other European women's psychological well-being. Women's psychological well-being was the focus of investigation because most internally and externally displaced Ukrainians are women (e.g., Andrews et al., 2023; Ueffing et al., 2023), and studies of displaced persons indicate that women's well-

being is more negatively affected by being displaced compared to men (e.g., Buchcik et al., 2023; Tavrovestska & Veldbrekht, 2022).

Ukrainian Women

Findings from the meta-analysis showed that the psychological well-being of displaced Ukrainian women following the Russian invasion of Ukraine was more negatively affected compared to nondisplaced Ukrainian women (PRQ-1). Findings also showed that the psychological well-being of displaced Ukrainian women was more negatively affected compared to women in all other regions of Europe (PRQ-2). In contrast, the psychological well-being of nondisplaced Ukrainian women did not differ from the well-being of women in all other regions of Europe (PRQ-3).

Results showed that the psychological well-being of Ukrainian and non-European women displaced in different European countries was affected by the number of months the women were displaced from their home communities or countries (PRQ-4). Although not a primary research question, the psychological well-being of Ukrainian and non-European women refugees displaced from their home communities and countries was more attenuated compared to European women residing in different regions of Europe (Table 3) as well as other world regions (Table 9). The pattern of results suggests that displacement per se seems to be at least one factor affecting the psychological health of refugee women, regardless of country of origin.

Results from the meta-analysis are similar to findings reported in other studies (e.g., Kurapov et al., 2023; Lushchak et al., 2024) and reviews (e.g., An et al., 2025; Ellis et al., 2024; Rizzi et al., 2023) where the psychological health of displaced Ukrainian citizens was more negatively affected compared to nondisplaced Ukrainian citizens. The findings add to the literature by showing that the psychological well-being of displaced Ukrainian women was more attenuated compared to women in all other regions of Europe (Table 3) as well as women in other world regions (Table 7) following the Russian invasion of Ukraine.

The results for the comparisons between Ukrainian and non-European women displaced in different European countries (Table 5) can be explained, in part, by the fact that a majority of Ukrainian women intend to return to their home country at the end of the war with Russia (Kogan et al., 2025). In contrast, most non-European refugee women residing in different European countries do not intend to return to their home countries (see e.g., Jasko et al., 2024). Return intentions, however, are affected by other explanatory variables (van Tubergen et al., 2024) that deserve further examination in other studies.

The reasons why the psychological well-being of Ukrainian and non-European refugee women is negatively affected are likely due to factors other than or in addition to displacement and return intentions. Findings from studies of factors related to the well-being of Ukrainian women displaced from their homes and communities following the Russian invasion of Ukraine show that social connectedness with Ukrainian family and friends and advice and guidance from help-giving professionals in host countries are associated with positive psychological health outcomes, whereas difficulties finding needed resources and professional assistance in host countries are associated with negative psychological health outcomes (e.g., Espe-Sherwindt et al., 2025; Krupelnyska et al., 2025; Michael & Tanculescu-Popa, 2024; Sadova-Chuba et al., 2023; Shelashska, 2025). A systematic analysis of factors associated with positive and negative psychological health outcomes of displaced Ukrainian women is the next step in the line of research described in this paper.

European Women

The comparisons of the women's psychological well-being in the different regions of Europe following the Russian Invasion of Ukraine found that the WHO-5 well-being scores were either more similar or different, depending on where the women resided in Europe (SRQ-1). The number of Ukrainian refugees in a European host country (SRQ-2), but not the number of Ukrainian refugees per 1000 residents in a European host country (SRQ-3), was related to European women's attenuated WHO-5 well-being scores. The distance from the Ukraine-Russia border (SRQ-4), but not the proximity to either Ukraine or Russia (SRQ-5), was associated with more attenuated women's WHO-5 well-being scores. Comparisons of the WHO-5 well-being scores of women residing in Europe and non-European women residing in three world regions not directly affected by the Russian invasion of Ukraine found that the WHO-5 scores were more similar than different (SRQ-6).

The contention that the well-being of European women residing in a country bordering Ukraine or Russia is more negatively affected by the Russian invasion of Ukraine is not supported by the evidence reported in the meta-analysis (e.g., Chudzica-Czupala et al., 2023; Kalaitzaki, 2024). For example, the weighted average WHO-5 well-being scores of women in the three countries closest to the Russia-Ukraine frontline (Estonia, Latvia, and Lithuania) are more similar to nondisplaced Ukrainian women and women in Central Europe and both the Balkan and Nordic countries (Table 3). Results from the meta-regression of the relationship for women residing in a country bordering either Ukraine or Russia (compared to all other European countries) found no discernible negative effect on women's psychological well-being (Table 6).

Results from the meta-analysis also do not support the contention that a disproportionate presence of Ukrainian citizens in a host country is associated with European women's attenuated well-being (Kimhi et al., 2023). Findings from the meta-regression analysis of the relationship between the number of Ukrainian refugee women per 1000 inhabitants in a host country and their WHO-5 well-being scores indicated no discernible effect (Table 6).

Several investigators have contended that the distance from the Ukraine-Russia border is a factor explaining variations in European women's well-being following the Russian invasion of Ukraine (Chudzica-Czupala et al., 2023; Kalaitzaki, 2024). The findings from these studies are, however, confounded by the fact that the countries in the analyses included women from both Europe and other parts of the world. This methodological issue was addressed in the study described in this paper by analyses of different samples of women in different European countries (Table 3) and analyses of different samples of women in different world regions (Table 7). In addition, the meta-regression analyses included an analysis of the relationship between the distance from the Ukraine-Russia border and women's WHO-5 well-being scores.

Results showed that women in western Europe, the region farthest from the Ukraine-Russia border, had the smallest WHO-5 well-being scores compared to women in all other regions of Europe, including women in the three eastern-most countries closest to the Russia-Ukraine frontline (Table 3). The results were confirmed by the meta-regression analyses, where residents of countries most distant from the Ukraine-Russia border reported poorer women's well-being (Table 5). These results are the opposite of those reported by Chudzica-Czupala et al. (2023) for Polish women and Kalaitzaki (2024) for Greek and Italian women, who found that the well-being scores of the samples of women were smaller than those of women in other regions of the world. Findings from the meta-analysis comparing the WHO-5 well-being scores of six samples of European women combined and the three samples of women in other world regions combined and not directly affected by the Russian invasion of Ukraine found no differences in the weighted average WHO-5 well-being scores for the two macro-samples of women (Table 7). There were, however, differences between the six samples of European women and between

the three samples of women in different world regions that require more detailed examination to identify explanatory factors for these differences.

CONCLUSION

The main result from the meta-analysis indicates that the psychological well-being of Ukrainian women displaced from their homes and communities following the Russian invasion of Ukraine was negatively affected compared to both nondisplaced Ukrainian women and women in other regions of Europe. A secondary result was that the psychological well-being of nondisplaced Ukrainian women was more similar than different compared to women residing in other parts of Europe. A third result was that the psychological well-being of European women was more similar than different compared to women residing in world regions not directly affected by the Russian invasion of Ukraine. The results, taken together, indicate that the psychological well-being of Ukrainian women who chose or were forced to flee their homes and communities as a result of the Russian invasion of their country was adversely affected by displacement, which was not found for nondisplaced Ukrainian women or women in other regions of Europe.

DATA AVAILABILITY

The data used for the meta-analysis are included in Appendices A and B.

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| Appendix A Selected Background Characteristics of the Female Study Participants | | | | | | | |
|--|-----------|-----------------------------|-----------------------------|------------|----------|-------|-----------|
| Study and Study Samples | Country | Type of Report ^a | Percent Female ^b | N (Female) | Mean Age | SD | Age Range |
| European Women | | | | | | | |
| Displaced Ukrainians | | | | | | | |
| Asanov et al. (2023) Sample 1 | Ukraine | JA | 91 | 427 | 37.18 | 9.71 | 18-57 |
| Asanov et al. (2023) Sample 2 | Ukraine | JA | 91 | 217 | 37.18 | 9.71 | 18-57 |
| Asanov et al. (2023) Sample 3 | Ukraine | JA | 91 | 44 | 37.18 | 9.71 | 18-57 |
| Espe-Sherwindt et al. (2025) | Ukraine | JA | 97 | 60 | 28.74 | 4.07 | 20-37 |
| Sarwar and Mustafa (2023) | Ukraine | PPP | 100 | 240 | 34.50 | 9.25 | 18-53 |
| Skalski-Bednarz et al. (2022) | Ukraine | JA | 82 | 199 | 37.60 | 8.90 | 18-68 |
| Nondisplaced Ukrainians | | | | | | | |
| Asanov et al. (2023) Sample 4 | Ukraine | JA | 91 | 372 | 37.18 | 9.71 | 18-57 |
| HIAS Foundation (2023) | Ukraine | URR | 100 | 608 | 40.17 | 10.50 | 18-60 |
| Owoc et al. (2024) | Ukraine | JA | 97 | 502 | 38.67 | 13.38 | 26-50 |
| Quaranta-Leech (2024) Sample 1 | Ukraine | DD | 100 | 26 | 43.00 | 6.93 | 24-62 |
| Quaranta-Leech (2024) Sample 2 | Ukraine | DD | 96 | 23 | 39.63 | 10.17 | 20-64 |
| Eastern Europe | | | | | | | |
| Ghate (2024) | Lithuania | MT | 73 | 45 | 41.56 | 14.64 | 18-64 |
| Muja et al. (2024) Sample 3 | Estonia | URR | 100 | 2169 | 28.10 | 8.70 | 19-51 |
| Muja et al. (2024) Sample 10 | Lithuania | URR | 100 | 993 | 25.20 | 7.30 | 18-53 |
| Muja et al. (2024) Sample 11 | Latvia | URR | 100 | 1521 | 27.40 | 8.90 | 18-52 |
| Nomeikaite et al. (2023) Sample 1 | Lithuania | JA | 95 | 95 | 39.78 | 11.83 | 22-73 |
| Nomeikaite et al. (2023) Sample 2 | Lithuania | JA | 94 | 90 | 42.12 | 12.39 | 22-73 |
| Northern Europe (Nordic Countries) | | | | | | | |
| Muja et al. (2024) Sample 2 | Denmark | URR | 100 | 5025 | 26.20 | 6.80 | 19-50 |
| Muja et al. (2024) Sample 4 | Finland | URR | 100 | 3818 | 29.90 | 9.10 | 19-53 |
| Muja et al. (2024) Sample 9 | Iceland | URR | 100 | 1880 | 31.50 | 9.80 | 19-57 |
| Muja et al. (2024) Sample 14 | Norway | URR | 100 | 4674 | 29.30 | 9.20 | 19-59 |
| Muja et al. (2024) Sample 18 | Sweden | URR | 100 | 4320 | 29.00 | 9.40 | 19-57 |
| Rozman et al. (2023, 2024) Sample 5 | Sweden | URR | 78 | 187 | 45.00 | 11.00 | 22-68 |
| Southeastern Europe (Balkans) | | | | | | | |
| Angelcheva (2023) | Bulgaria | JA | 100 | 25 | 44.80 | 4.60 | 34-55 |
| Claponea and Iorga (2023) Sample 1 | Romania | JA | 85 | 312 | 43.75 | 8.19 | 26-63 |
| Claponea and Iorga (2023) Sample 2 | Romania | JA | 85 | 111 | 45.63 | 9.30 | 27-64 |
| Kallay (2022) | Romania | JA | 85 | 330 | 27.18 | 9.32 | 18-48 |
| Kozina (2024) | Slovenia | JA | 96 | 253 | 41.98 | 7.67 | 27-57 |
| Muja et al. (2024) Sample 6 | Croatia | URR | 100 | 3989 | 24.60 | 6.00 | 18-52 |
| Muja et al. (2024) Sample 17 | Romania | URR | 100 | 3320 | 24.70 | 7.00 | 18-54 |
| Postuvan et al. (2024) | Slovenia | JA | 100 | 211 | 52.43 | 13.78 | 25-80 |
| Rozman et al. (2023, 2024) Sample 2 | Croatia | URR | 95 | 241 | 43.00 | 9.00 | 25-61 |
| Rozman et al. (2023, 2024) Sample 4 | Slovenia | URR | 93 | 245 | 42.00 | 8.00 | 26-58 |
| van Baar et al. (2025) | Moldova | JA | 100 | 962 | 41.20 | 13.60 | 18-64 |
| Central Europe | | | | | | | |
| Acosta (2023) | Germany | MT | 100 | 184 | 33.72 | 9.18 | 19-71 |
| Borgdorf et al. (2025) Sample 1 | Germany | JA | 75 | 60 | 28.16 | 4.70 | 19-39 |
| Borgdorf et al. (2025) Sample 2 | Germany | JA | 75 | 63 | 63.55 | 7.20 | 50-78 |
| Bussing (2024) | Germany | JA | 89 | 691 | 44.20 | 11.10 | 18-74 |
| Kisker and Schone (2023) Sample 1 | Germany | JA | 75 | 24 | 22.85 | 3.28 | 17-29 |
| Kisker and Schone (2023) Sample 2 | Germany | JA | 77 | 23 | 22.30 | 2.90 | 17-28 |
| Laajili et al. (2025) Sample 1 | Hungary | JA | 100 | 121 | 21.43 | 3.08 | 18-35 |
| Appendix A, continued. | | | | | | | |
| Study and Study Samples | Country | Type of Report | Percent Female | N (Female) | Mean Age | SD | Age Range |
| Central Europe, continued. | | | | | | | |
| Laajili et al. (2025) Sample 2 | Hungary | JA | 100 | 75 | 22.31 | 3.86 | 18-35 |
| Laajili et al. (2025) Sample 3 | Hungary | JA | 100 | 104 | 22.30 | 3.72 | 18-35 |
| Larionow (2023) | Poland | JA | 100 | 661 | 27.81 | 10.90 | 18-72 |

| | | | | | | | | |
|-------------------------------------|-------------------------------------|------------------|----------------|----------------|------------|----------|-------|-----------|
| | Muja et al. (2024) Sample 1 | Czech Republic | URR | 100 | 8321 | 25.20 | 6.90 | 19-61 |
| | Muja et al. (2024) Sample 7 | Hungary | URR | 100 | 7774 | 25.70 | 7.70 | 18-55 |
| | Muja et al. (2024) Sample 15 | Poland | URR | 100 | 6791 | 24.70 | 6.80 | 18-54 |
| | Muja et al. (2024) Sample 19 | Slovakia | URR | 100 | 2447 | 25.20 | 6.80 | 19-53 |
| | Nowak and Zanevsky (2024) | Poland | JA | 100 | 99 | 22.20 | 2.10 | 18-26 |
| | Polanska et al. (2024) | Poland | JA | 100 | 149 | 24.50 | 6.30 | 20-50 |
| | Rozman et al. (2023, 2024) Sample 1 | Austria | URR | 90 | 153 | 42.00 | 11.00 | 22-66 |
| | Shaffler et al. (2024) | Austria | JA | 80 | 400 | 53.40 | 9.26 | 40-70 |
| | Schillings et al. (2024) Sample 1 | Germany | JA | 72 | 42 | 33.12 | 11.78 | 18-56 |
| | Schillings et al. (2024) Sample 2 | Germany | JA | 81 | 48 | 33.09 | 13.83 | 18-60 |
| | Spitzer et al. (2025) | Germany | JA | 77 | 53 | 25.10 | 2.80 | 19-32 |
| | Szepe and Meszaros (2024) | Hungary | JA | 88 | 494 | 23.88 | 6.30 | 18-36 |
| | Wirkner and Brakemeier (2024) | Germany | JA | 73 | 593 | 22.90 | 3.90 | 18-31 |
| Southern Europe | | | | | | | | |
| | Angelini et al. (2024) | Italy | JA | 92 | 742 | 47.54 | 9.91 | 19-68 |
| | Fucarino et al. (2024) | Italy | JA | 100 | 17 | 36.40 | 3.90 | 28-44 |
| | Muja et al. (2024) Sample 12 | Malta | URR | 100 | 583 | 26.80 | 9.10 | 17-57 |
| | Muja et al. (2024) Sample 16 | Portugal | URR | 100 | 5481 | 23.70 | 6.90 | 17-58 |
| | Rosa et al. (2024) Sample 1 | Spain | JA | 74 | 105 | 26.40 | 8.67 | 18-83 |
| | Rosa et al. (2024) Sample 2 | Spain | JA | 74 | 218 | 26.40 | 8.67 | 18-83 |
| | Rozman et al. (2023, 2024) Sample 3 | Portugal | URR | 92 | 254 | 50.00 | 8.80 | 32-68 |
| | Yas and Incesu (2024) Sample 1 | Turkey | JA | 86 | 35 | 21.90 | 0.82 | 20-24 |
| | Yas and Incesu (2024) Sample 2 | Turkey | JA | 83 | 35 | 22.10 | 0.75 | 20-24 |
| Western Europe | | | | | | | | |
| | Jones et al. (2024) Sample 1 | United Kingdom | JA | 100 | 230 | 34.73 | 6.57 | 18-49 |
| | Jones et al. (2024) Sample 2 | United Kingdom | JA | 100 | 291 | 34.65 | 5.87 | 18-46 |
| | Marchant et al. (2024) | Northern Ireland | JA | 73 | 110 | 44.89 | 8.25 | 30-65 |
| | Muja et al. (2024) Sample 5 | France | URR | 100 | 23813 | 22.70 | 5.60 | 19-54 |
| | Muja et al. (2024) Sample 8 | Ireland | URR | 100 | 7573 | 26.40 | 9.70 | 17-59 |
| | Muja et al. (2024) Sample 13 | The Netherlands | URR | 100 | 4770 | 23.20 | 5.50 | 17-58 |
| | Peraud et al. (2022) | France | JA | 89 | 668 | 47.54 | 9.10 | 29-66 |
| | Rou et al. (2022) | Belgian | JA | 75 | 232 | 37.99 | 12.20 | 21-65 |
| Non-European Women | | | | | | | | |
| Latin America/Caribbean | | | | | | | | |
| | Acosta (2023) | Argentina | MT | 100 | 164 | 32.58 | 8.11 | 19-71 |
| | Corituma-Basaldua et al. (2024) | Puru | JA | 68 | 443 | 34.31 | 12.28 | 18-60+ |
| | Hirshberg et al. (2023) Sample 1 | Mexico | URR | 73 | 845 | 33.70 | 11.40 | 19-79 |
| | Hirshberg et al. (2023) Sample 2 | Mexico | URR | 73 | 845 | 33.70 | 11.40 | 19-79 |
| | Romano et al. (2025) | Brazil | JA | 91 | 161 | 42.50 | 9.50 | 18-68 |
| | Rosas (2024) | Guatemala | UT | 100 | 67 | 39.00 | 11.70 | 18-60 |
| Appendix A, continued. | | | | | | | | |
| Study and Study Samples | | Country | Type of Report | Percent Female | N (Female) | Mean Age | SD | Age Range |
| Latin America/Caribbean, continued. | | | | | | | | |
| | Santiago et al. (2024) | Cuba | JA | 84 | 64 | 20.10 | 1.52 | 18-24 |
| | Schaab et al. (2024) | Brazil | JA | 72 | 71 | 27.53 | 8.55 | 18-45 |
| | Seymour (2023) | Cayman Islands | DD | 96 | 75 | 40.60 | 10.17 | 22-62 |
| North America | | | | | | | | |
| | Chandler (2024) | Canada | MT | 100 | 228 | 43.30 | 13.20 | 18-79 |
| | Flood (2023) | USA | DD | 83 | 10 | 25.00 | NR | NR |
| | Foran et al. (2024) Sample 1 | USA | JA | 81 | 764 | 47.22 | 16.46 | 18-80 |
| | Foran et al. (2024) Sample 2 | USA | JA | 80 | 317 | 47.11 | 16.68 | 18.80 |
| | Kietrys et al. (2024) | USA | JA | 71 | 458 | NR | NR | NR |
| | Obuobi-Donkor et al. (2024) | Canada | JA | 85 | 127 | 26.00 | 11.25 | 25-65+ |
| | Purchase et al. (2024) | Canada | JA | 90 | 265 | 37.00 | 6.25 | 25-50+ |

| | | | | | | | | |
|---|----------------------------------|---------------------|----|-----|-----|-------|-------|--------|
| | Sceppaguerccio (2024) | USA | DD | 69 | 161 | 19.74 | 1.86 | 18-24 |
| | Smith-Esterle (2024) | USA | DD | 83 | 10 | 39.00 | 10.00 | 23-54 |
| | Snyder (2023) | USA | DD | 100 | 10 | 32.00 | 10.00 | 24-40+ |
| | Su et al. (2025) | Canada | JA | 100 | 84 | 24.02 | 3.70 | 17-35 |
| Oceania/South Pacific | | | | | | | | |
| | Davies et al. (2023) Sample 1 | New Zealand | JA | 90 | 25 | 37.20 | 9.90 | 25-60 |
| | Davies et al. (2023) Sample 2 | New Zealand | JA | 71 | 22 | 38.80 | 11.00 | 25-60 |
| | Davies et al. (2023) Sample 3 | New Zealand | JA | 79 | 46 | 39.10 | 8.60 | 25-60 |
| | Fangupo (2023) Sample 1 | New Zealand | DD | 100 | 482 | 32.00 | 9.50 | 16-54 |
| | Fangupo (2023) Sample 2 | New Zealand | DD | 100 | 328 | 30.00 | 9.50 | 16-54 |
| | Fangupo (2023) Sample 3 | New Zealand | DD | 100 | 114 | 29.00 | 9.50 | 16-54 |
| | Foster et al. (2024) | Australia | JA | 70 | 61 | 28.00 | 7.50 | 20-40+ |
| | Grimes et al. (2024) Sample 1 | New Zealand | JA | 73 | 24 | 28.00 | 14.25 | 18-75+ |
| | Grimes et al. (2024) Sample 2 | New Zealand | JA | 72 | 66 | 28.00 | 14.25 | 18-75+ |
| | Hechanova et al. (2023) Sample 1 | Philippines | JA | 79 | 107 | 20.95 | 1.34 | 18-24 |
| | Hechanova et al. (2023) Sample 2 | Philippines | JA | 78 | 95 | 20.73 | 1.19 | 18-23 |
| | Hechanova et al. (2023) Sample 3 | Philippines | JA | 78 | 99 | 20.85 | 1.25 | 18-24 |
| | Lai et al. (2025) | Australia | JA | 81 | 772 | 20.88 | 6.12 | 18-35 |
| | Say et al. (2024) | Malaysia | JA | 100 | 135 | 22.10 | 5.00 | 18-34 |
| | Shahin et al. (2024) | Australia | JA | 73 | 136 | 35.00 | 8.75 | 20-51+ |
| | Shahrazad et al. (2025) | Malaysia | JA | 100 | 170 | 22.23 | 2.43 | 17-28 |
| Non-European Women Displaced in Europe | | | | | | | | |
| Women Refugees | | | | | | | | |
| | Alexander et al. (2021) | Sweden | JA | 100 | 453 | 38.32 | NR | 18-64 |
| | Gerber et al. (2023) Sample 1 | Greece | JA | 100 | 36 | 29.00 | 9.32 | 16-40 |
| | Gerber et al. (2023) Sample 2 | Greece | JA | 100 | 36 | 29.00 | 9.32 | 16-40 |
| | Karyotaki et al. (2023) Sample 1 | Europe ^c | JA | 68 | 587 | 31.50 | 10.00 | 18-50 |
| | Karyotaki et al. (2023) Sample 2 | Europe ^c | JA | 69 | 625 | 31.50 | 10.00 | 18-50 |
| | Kaufmann et al. (2020) | Germany | JA | 100 | 120 | 26.90 | 5.50 | 18-43 |
| ^a DD = Doctoral dissertation, JA = Peer-reviewed journal article, MT = Master's thesis, PPP = PowerPoint presentation, URR = Unpublished research report, and UT = Undergraduate thesis. ^b Percentage of the total study sample that were female participants. ^c Austria, Finland, Germany, Italy, and United Kingdom. NOTE. The age variables in some cases were estimated based on available information in the research reports or located in supplemental material for individual studies. NA = Not reported. | | | | | | | | |

| Appendix B | | | | | | | |
|---|--------------------------------|---------|--------------------|------------------------|------------|-------|-------|
| World Health Organization Five Item (WHO-5) Well-Being Index Scores | | | | | | | |
| Study and Study Samples | Year Data Collection | Country | Study Participants | N (Female) | WHO-5 Mean | SD | |
| European Women | | | | | | | |
| Displaced Women | | | | | | | |
| | Asanov et al. (2023) Sample 1 | 2022 | Ukraine | General Population | 427 | 34.27 | 15.60 |
| | Asanov et al. (2023) Sample 2 | 2022 | Ukraine | General Population | 217 | 38.66 | 17.32 |
| | Asanov et al. (2023) Sample 3 | 2022 | Ukraine | Migrants/Living Abroad | 44 | 33.67 | 15.69 |
| | Espe-Sherwindt et al. (2025) | 2022-23 | Ukraine | Mothers | 60 | 35.90 | 23.71 |
| | Sarwar and Mustafa (2023) | 2022 | Ukraine | Mothers | 240 | 48.00 | 23.68 |
| | Skalski-Bednarz et al. (2022) | 2022 | Ukraine | General Population | 199 | 36.80 | 19.00 |
| Nondisplaced Women | | | | | | | |
| | Asanov et al. (2023) Sample 4 | 2022 | Ukraine | General Population | 372 | 40.98 | 16.15 |
| | HIAS Foundation (2023) | 2023 | Ukraine | General Population | 608 | 41.54 | 21.03 |
| | Owoc et al. (2024) | 2023 | Ukraine | Healthcare Workers | 502 | 62.67 | 18.15 |
| | Quaranta-Leech (2024) Sample 1 | 2023 | Ukraine | Psychologists | 26 | 50.31 | 16.86 |
| | Quaranta-Leech (2024) Sample 2 | 2023 | Ukraine | Psychologists | 23 | 53.50 | 18.57 |
| Eastern Europe | | | | | | | |
| | Ghate (2024) | 2023 | Lithuania | Healthcare Workers | 45 | 56.00 | 18.80 |
| | Muja et al. (2024) Sample 3 | 2022 | Estonia | University Students | 2169 | 49.70 | 19.30 |

| | | | | | | |
|-------------------------------------|----------------------|----------------|-----------------------|------------|------------|-------|
| Muja et al. (2024) Sample 10 | 2022 | Lithuania | University Students | 993 | 46.00 | 20.20 |
| Muja et al. (2024) Sample 11 | 2022 | Latvia | University Students | 1521 | 47.40 | 19.60 |
| Nomeikaite et al. (2023) Sample 1 | 2022 | Lithuania | Healthcare Workers | 95 | 35.40 | 19.48 |
| Nomeikaite et al. (2023) Sample 2 | 2022 | Lithuania | Healthcare Workers | 90 | 35.38 | 19.48 |
| Northern Europe (Nordic Countries) | | | | | | |
| Muja et al. (2024) Sample 2 | 2022 | Denmark | University Students | 5025 | 51.10 | 19.90 |
| Muja et al. (2024) Sample 4 | 2022 | Finland | University Students | 3818 | 52.20 | 17.70 |
| Muja et al. (2024) Sample 9 | 2022 | Iceland | University Students | 1880 | 55.80 | 19.90 |
| Muja et al. (2024) Sample 14 | 2022 | Norway | University Students | 4674 | 51.00 | 17.10 |
| Muja et al. (2024) Sample 18 | 2022 | Sweden | University Students | 4320 | 52.50 | 20.20 |
| Rozman et al. (2023, 2024) Sample 5 | 2022 | Sweden | Teachers/School Staff | 187 | 62.20 | 19.80 |
| Southeastern Europe (Balkans) | | | | | | |
| Angelcheva (2023) | 2022 | Bulgaria | Overweight Women | 25 | 50.67 | 11.11 |
| Claponea and Iorga (2023) Sample 1 | 2023 | Romania | Healthcare Workers | 312 | 47.80 | 16.25 |
| Claponea and Iorga (2023) Sample 2 | 2023 | Romania | Healthcare Workers | 111 | 41.32 | 16.25 |
| Kallay (2022) | 2022 | Romania | University Students | 330 | 57.07 | 20.17 |
| Kozina (2024) | 2022 | Slovenia | Teachers | 253 | 54.00 | 19.40 |
| Muja et al. (2024) Sample 6 | 2022 | Croatia | University Students | 3989 | 52.70 | 21.10 |
| Muja et al. (2024) Sample 17 | 2023 | Romania | University Students | 3320 | 44.50 | 25.10 |
| Postuvan et al. (2024) | 2023 | Slovenia | General Population | 211 | 59.76 | 21.72 |
| Rozman et al. (2023, 2024) Sample 2 | 2022 | Croatia | Teachers/School Staff | 241 | 56.40 | 19.80 |
| Rozman et al. (2023, 2024) Sample 4 | 2022 | Slovenia | Teachers/School Staff | 245 | 54.00 | 19.40 |
| van Baar et al. (2025) | 2022 | Moldova | General Population | 962 | 65.10 | 22.60 |
| Central Europe | | | | | | |
| Acosta (2023) | 2023 | Germany | General Population | 184 | 51.48 | 19.84 |
| Borgdorf et al. (2025) Sample 1 | 2023 | Germany | General Population | 60 | 71.40 | 19.40 |
| Borgdorf et al. (2025) Sample 2 | 2023 | Germany | General Population | 63 | 72.00 | 18.60 |
| Appendix B, continued. | | | | | | |
| Study and Study Samples | Year Data Collection | Country | Study Participants | N (Female) | WHO-5 Mean | SD |
| Central Europe, continued. | | | | | | |
| Bussing (2024) | 2022 | Germany | Yoga Practitioners | 691 | 69.60 | 16.40 |
| Kisker and Schone (2023) Sample 1 | 2022 | Germany | University Students | 24 | 59.40 | 12.00 |
| Kisker and Schone (2023) Sample 2 | 2022 | Germany | University Students | 23 | 60.00 | 12.00 |
| Laajili et al. (2025) Sample 1 | 2023 | Hungary | Athletes | 121 | 58.57 | 19.21 |
| Laajili et al. (2025) Sample 2 | 2023 | Hungary | Athletes | 75 | 54.83 | 19.04 |
| Laajili et al. (2025) Sample 3 | 2023 | Hungary | General Population | 104 | 47.23 | 20.07 |
| Larionow (2023) | 2023 | Poland | General Population | 661 | 32.84 | 19.40 |
| Muja et al. (2024) Sample 1 | 2022 | Czech Republic | University Students | 8321 | 47.30 | 20.60 |
| Muja et al. (2024) Sample 7 | 2022 | Hungary | University Students | 7774 | 49.90 | 20.50 |
| Muja et al. (2024) Sample 15 | 2022 | Poland | University Students | 6491 | 43.30 | 22.80 |
| Muja et al. (2024) Sample 19 | 2022 | Slovakia | University Students | 2447 | 44.30 | 22.90 |
| Nowak and Zanevsky (2024) | 2023 | Poland | Medical Students | 99 | 54.40 | 18.00 |
| Polanska et al. (2024) | 2023 | Poland | General Population | 149 | 40.00 | 19.20 |
| Rozman et al. (2023, 2024) Sample 1 | 2022 | Austria | Teachers/School Staff | 153 | 48.40 | 21.40 |
| Schaffler et al. (2024) | 2023 | Austria | Psychotherapists | 400 | 62.10 | 18.09 |
| Shillings et al. (2024) Sample 1 | 2022 | Germany | General Population | 42 | 41.15 | 17.34 |
| Shillings et al. (2024) Sample 2 | 2022 | Germany | General Population | 48 | 42.78 | 17.30 |
| Spitzer et al. (2025) | 2023 | Germany | University Students | 53 | 56.00 | 19.00 |
| Szepe and Meszaros (2024) | 2023 | Hungary | University Students | 494 | 42.62 | 20.51 |
| Wirkner and Brakenwier (2025) | 2022 | Germany | University Students | 593 | 59.10 | 19.50 |
| Southern Europe | | | | | | |
| Angelini et al. (2024) | 2023 | Italy | Teachers | 742 | 65.47 | 19.21 |
| Fucarino et al. (2024) | 2022 | Italy | General Population | 17 | 52.96 | 20.56 |
| Muja et al. (2024) Sample 12 | 2022 | Malta | University Students | 583 | 44.90 | 22.30 |
| Muja et al. (2024) Sample 16 | 2023 | Portugal | University Students | 5481 | 44.10 | 19.50 |
| Rosa et al. (2024) Sample 1 | 2023 | Spain | General Population | 105 | 50.80 | 16.80 |
| Rosa et al. (2024) Sample 2 | 2023 | Spain | General Population | 218 | 49.40 | 14.00 |
| Rozman et al. (2023, 2024) Sample 3 | 2022 | Portugal | Teachers/School Staff | 254 | 53.40 | 18.80 |
| Yas and Incesu (2024) Sample 1 | 2023 | Turkey | Nursing Students | 35 | 52.20 | 15.72 |
| Yas and Incesu (2024) Sample 2 | 2023 | Turkey | Nursing Students | 35 | 53.43 | 16.87 |

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|---|----------------------------------|----------------------|------------------|-----------------------------|------------|------------|-------|
| Western Europe | | | | | | | |
| | Jones et al. (2024) Sample 1 | 2022 | United Kingdom | Mothers | 230 | 56.52 | 19.85 |
| | Jones et al. (2024) Sample 2 | 2022 | United Kingdom | Mothers | 291 | 40.44 | 21.48 |
| | Marchant et al. (2024) | 2022 | Northern Ireland | Headteachers | 110 | 36.08 | 20.59 |
| | Muja et al. (2024) Sample 5 | 2023 | France | University Students | 23813 | 45.90 | 20.50 |
| | Muja et al. (2024) Sample 8 | 2022 | Ireland | University Students | 7573 | 44.10 | 21.40 |
| | Muja et al. (2024) Sample 13 | 2022 | The Netherlands | University Students | 4770 | 49.00 | 19.70 |
| | Peraud et al. (2022) | 2022 | France | General Population | 668 | 49.00 | 22.76 |
| | Rou et al. (2022) | 2022 | Belgian | Forensic Workers | 232 | 62.62 | 18.10 |
| Non-European Women | | | | | | | |
| Latin America/Caribbean | | | | | | | |
| | Acosta (2023) | 2023 | Argentina | General Population | 164 | 48.92 | 19.00 |
| | Corituma-Basaldua et al. (2024) | 2022 | Peru | Dental Care Staff | 443 | 63.16 | 29.87 |
| | Hirshberg et al. (2023) Sample 1 | 2023 | Mexico | Healthcare Workers | 845 | 59.44 | 19.56 |
| | Hirshberg et al. (2023) Sample 2 | 2023 | Mexico | Healthcare Workers | 845 | 59.52 | 19.92 |
| | Romano et al. (2025) | 2022 | Brazil | Teachers | 161 | 51.20 | 21.88 |
| | Rosas (2024) | 2023 | Guatemala | Healthcare Workers | 67 | 67.50 | 14.90 |
| | Santiago et al. (2024) | 2023 | Cuba | General Population | 64 | 47.60 | 15.52 |
| Appendix B, continued. | | | | | | | |
| | Study and Study Samples | Year Cata Collection | Country | Study Participants | N (Female) | WHO-5 Mean | SD |
| Latin America/Caribbean. Continued. | | | | | | | |
| | Schaab et al. (2024) | 2023 | Brazil | University Students | 71 | 40.68 | 19.00 |
| | Seymour (2023) | 2023 | Grand Cayman | Teachers | 75 | 68.31 | 18.21 |
| North America | | | | | | | |
| | Chandler (2024) | 2022 | Canada | General Population | 228 | 56.80 | 24.45 |
| | Foran et al. (2024) Sample 1 | 2022-23 | USA | General Population | 764 | 42.82 | 21.80 |
| | Foran et al. (2024) Sample 2 | 2022-23 | USA | General Population | 317 | 43.96 | 21.77 |
| | Flood (2023) | 2022 | USA | University Students | 10 | 54.92 | 11.04 |
| | Kietrys et al. (2024) | 2022 | USA | University Students | 458 | 49.46 | 17.93 |
| | Obuobi-Donkor et al. (2024) | 2023 | Canada | General Population | 127 | 48.60 | 20.92 |
| | Purchase et al. (2024) | 2023 | Canada | Healthcare Workers | 265 | 44.02 | 19.27 |
| | Sceppaguercio (2024) | 2023 | USA | Athletes | 161 | 58.76 | 16.92 |
| | Smith-Esterle (2024) | 2023 | USA | Healthcare Workers | 10 | 54.00 | 19.72 |
| | Snyder (2023) | 2022 | USA | Pregnant Women | 10 | 56.40 | 21.60 |
| | Su et al. (2025) | 2022 | Canada | University Students | 84 | 54.28 | 26.80 |
| Oceania/South Pacific | | | | | | | |
| | Davies et al. (2023) Sample 1 | 2022 | New Zealand | General Population | 25 | 46.00 | 20.00 |
| | Davies et al. (2023) Sample 2 | 2022 | New Zealand | General Population | 22 | 45.60 | 14.80 |
| | Davies et al. (2023) Sample 3 | 2022 | New Zealand | General Population | 46 | 44.80 | 14.40 |
| | Fangupo (2023) Sample 1 | 2022 | New Zealand | Mothers | 482 | 52.88 | 17.36 |
| | Fangupo (2023) Sample 2 | 2022 | New Zealand | Mothers | 328 | 54.56 | 18.28 |
| | Fangupo (2023) Sample 3 | 2022 | New Zealand | Mothers | 114 | 53.28 | 18.84 |
| | Foster et al. (2022) | 2022 | Australia | Healthcare Workers | 61 | 64.16 | 16.16 |
| | Grimes et al. (2024) Sample 1 | 2022 | New Zealand | General Population | 24 | 48.11 | 28.60 |
| | Grimes et al. (2024) Sample 2 | 2022 | New Zealand | General Population | 66 | 59.50 | 25.10 |
| | Hechanova et al. (2023) Sample 1 | 2022 | Philippines | University Students | 107 | 52.36 | 21.76 |
| | Hechanova et al. (2023) Sample 2 | 2022 | Philippines | University Students | 95 | 50.20 | 23.88 |
| | Hechanova et al. (2023) Sample 3 | 2022 | Philippines | University Students | 99 | 54.20 | 23.00 |
| | Lai et al. (2025) | 2022 | Australia | General Population | 772 | 51.24 | 20.60 |
| | Say et al. (2024) | 2022 | Malaysia | General Population | 135 | 60.00 | 24.00 |
| | Shahrazad et al. (2025) | 2022 | Malaysia | University Students | 170 | 65.29 | 17.05 |
| | Shahin et al. (2024) | 2022 | Australia | Healthcare Workers | 137 | 50.40 | 24.80 |
| Non-European Women Displaced in Europe | | | | | | | |
| Women Refugees | | | | | | | |
| | Alexander et al. (2021) | 2016 | Sweden | Syrian Refugees | 453 | 54.82 | 26.38 |
| | Gerber et al. (2023) Sample 1 | 2020-21 | Greece | Female Refugees | 36 | 55.48 | 27.52 |
| | Gerber et al. (2023) Sample 2 | 2020-21 | Greece | Female Refugees | 36 | 47.76 | 30.56 |
| | Karotaki et al. (2023) Sample 1 | 2018-19 | See Appendix A | Syrian/South Sudan Refugees | 587 | 38.70 | 23.99 |

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|--|---------------------------------|---------|----------------|-----------------------------|-----|-------|-------|
| | Karotaki et al. (2023) Sample 2 | 2018-19 | See Appendix A | Syrian/South Sudan Refugees | 625 | 39.85 | 24.07 |
| | Kaufmann et al. (2022) | 2017-18 | Germany | Female Refugees | 120 | 36.40 | 22.40 |