ACCSCIENCE PUBLISHING

Health Psychology Research

RESEARCH ARTICLE

Associations of post-migration difficulties and religious coping with psychological distress among Syrian refugee youth

Saleh Fawwaz Khataybeh[1], Mahadir Ahmad[1]*, and Fawwaz Ayoub Momani[2]

[1]Clinical Psychology and Behavioural Health Programme, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia

[2]Department of Counseling and Educational Psychology, Faculty of Educational Sciences, Yarmouk University, Irbid, Jordan

Abstract

Background: Syrian refugee youth in Jordan experience persistent post-migration difficulties that may affect psychological well-being. Religious coping represents a culturally relevant response to adversity, although its relationship with psychological distress remains unclear.

Objective: To examine the associations of post-migration living difficulties (PMLD) and positive and negative religious coping with psychological distress among Syrian refugee youth in Jordan.

Methods: A cross-sectional study was conducted among 460 Syrian refugees aged 15–29 years residing in refugee camps and host communities in Jordan. Data were collected between August and September 2025 using the Arabic PMLD Scale, Brief Religious Coping Scale, and Brief Symptom Inventory-53. Multivariable linear regression examined associations with psychological distress, adjusting for sociodemographic characteristics. Separate interaction models examined the moderating roles of positive and negative religious coping.

Results: The mean PMLD score was 35.20 ± 4.95, with financial hardship, difficulties obtaining financial assistance, family-related concerns, and employment challenges receiving the highest ratings. Positive religious coping was more frequently reported than negative religious coping (19.01 ± 3.00 vs. 8.08 ± 3.29). The mean raw Global Severity Index (GSI) was 1.47 ± 0.17. PMLD was not significantly correlated with GSI ($r = -0.022$, $p = .637$). In the adjusted regression model, PMLD ($p = 0.351$), positive religious coping ($p = 0.345$), and negative religious coping ($p = 0.848$) were not significantly associated with GSI. Neither positive ($p = 0.860$) nor negative religious coping ($p = 0.190$) significantly moderated the PMLD–GSI association.

Conclusion: Post-migration adversity and religious coping were not independently associated with psychological distress in this sample. Findings should be interpreted cautiously given limitations in measurement reliability. Culturally responsive psychosocial services should consider both psychological needs and persistent socioeconomic challenges affecting refugee youth.

Keywords: Syrian refugees; Youth; Post-migration living difficulties; Religious coping; Psychological distress; Jordan

***Corresponding author:**
Mahadir Ahmad
(mahadir@ukm.edu.my)

Citation: Khataybeh SF, Ahmad M, Momani FA. Associations of post-migration difficulties and religious coping with psychological distress among Syrian refugee youth. *Health Psychol Res*.
doi: 10.36922/HPR026340210

Received: August 23, 2026

Revised: September 28, 2026

Accepted: October 19, 2026

Published online: November 18, 2026

Copyright: © 2026 Author(s). This is an Open-Access article distributed under the terms of the Creative Commons AttributionNon-Commercial 4.0 International (CC BY-NC 4.0), which permits all non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Publisher's Note: AccScience Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

1. Introduction

The Syrian conflict has generated one of the most prolonged displacement crises of the past decade, exposing millions of people to forced migration, loss, family disruption, and prolonged uncertainty regarding their future.[1,2] Refugees may continue to experience psychological and social consequences after reaching relative physical safety because displacement is followed by persistent economic, legal, educational, and social challenges in host countries.[3,4] Jordan remains an important setting for examining these challenges, with 420,835 registered Syrian refugees reported as of December 31, 2025, and approximately 82% of registered refugees residing outside formal refugee camps.[1] Syrian youth may be particularly vulnerable because displacement coincides with developmental transitions involving identity formation, education, employment, social relationships, and increasing independence.[2]

Post-migration living difficulties (PMLD) refer to the social, economic, cultural, and practical stressors experienced following relocation to a host country, including financial hardship, unemployment, discrimination, family separation, social isolation, language difficulties, and barriers to essential services.[5] These stressors are particularly important because they are persistent, context-dependent, and potentially modifiable through social, humanitarian, and policy interventions.[3] Research among Syrian refugees in Jordan has demonstrated that post-migration difficulties vary according to sociodemographic and living circumstances, indicating that displacement-related adversity is not experienced uniformly across refugee populations.[3] More recent research has also shown that post-migration stress may persist across educational and sociodemographic groups and may remain relevant to psychological well-being long after initial displacement.[6] Psychological distress among refugee populations commonly includes depressive, anxiety, somatic, and other emotional symptoms, reinforcing the importance of examining current post-migration conditions alongside previous exposure to displacement-related adversity.[2,7]

Coping processes may influence how individuals interpret and respond to continuing post-migration stressors, particularly when many of these stressors cannot be readily controlled or eliminated.[8] Religious coping refers to the use of religious beliefs, practices, and resources to understand and manage stressful experiences and may provide meaning, emotional regulation, spiritual support, and perceived control during adversity.[9] Positive religious coping (PRC) includes strategies such as seeking spiritual support, benevolent religious reappraisal, religious forgiveness, and collaborative coping with God, whereas negative religious coping (NRC) includes spiritual struggle, punitive interpretations, and feelings of abandonment by God.[9,10] PRC has generally been associated with more favorable psychological adjustment, while NRC has more frequently been associated with greater psychological distress, although these relationships are not uniform across populations and contexts.[11]

Evidence concerning the association between religious coping and mental health among refugees nevertheless remains mixed, particularly when religion is examined in populations exposed to prolonged displacement and continuing socioeconomic adversity.[12] Existing refugee research has often examined religiosity, spirituality, or religious coping as independent correlates or potential protective resources rather than simultaneously examining their relationships with specific post-migration difficulties and psychological distress.[12] Positive and NRC also represent conceptually distinct responses to adversity and may be associated differently with psychological adaptation, making their separate examination important.[9,10] Despite the growing literature on refugee mental health, comparatively limited research has simultaneously examined PMLD, PRC, and NRC, and psychological distress specifically among Syrian youth refugees aged 15 to 29 years in Jordan.[2,7,12]

Clarifying these associations is important because Syrian youth living under similar post-migration circumstances may experience different psychological outcomes according to their coping resources, beliefs, perceived support, and broader social environments.[8,9] Examining PMLD and religious coping together may therefore provide a more contextually informed understanding of psychological distress than considering post-migration adversity or coping in isolation.[8,9,13,14] Accordingly, the present quantitative cross-sectional study aimed to examine the associations of PMLD and PRC and NRC with psychological distress among Syrian youth refugees in Jordan, while also assessing differences in these variables across relevant sociodemographic characteristics.[12] The study is intended to provide evidence that may support culturally responsive mental health and psychosocial services by clarifying the post-migration and coping-related factors associated with psychological distress in this population.[3,7]

2. Materials and methods

2.1. Materials

Three Arabic self-report instruments were used to assess the principal study variables: the PMLD Scale, the Brief Religious Coping Scale (Brief RCOPE), and the Brief Symptom Inventory-53 (BSI-53). A sociodemographic information form was also used to collect participants'

demographic and background characteristics.

2.1.1. Post-Migration Living Difficulties Scale

The PMLD Scale was used to assess difficulties experienced by Syrian youth refugees following forced migration and resettlement. The 17-item version reported by Schick *et al.*[15] served as the basis for Arabic translation and cultural adaptation. Following expert review, the item "Conflicts with social workers/other authorities" was removed, resulting in a 16-item Arabic version used in the present study. The retained items covered financial hardship, employment difficulties, legal and administrative concerns, family separation, social integration, discrimination, and access to essential services.

Each item was rated on a five-point scale ranging from 0 to 4. The total PMLD score was calculated by summing responses across the 16 retained items, yielding a possible range of 0–64, with higher scores indicating greater post-migration difficulties. No reverse-scored items were included.

Content validity was evaluated by five subject-matter experts. The item-level content validity index (I-CVI) ranged from 0.80 to 1.00, while the scale-level content validity index based on the average method (S-CVI/Ave) was 0.94 and the scale-level content validity index based on universal agreement (S-CVI/UA) was 0.69. These findings supported the content relevance of the culturally adapted instrument.

In the preliminary pilot study involving 30 participants, the 16-item version demonstrated good internal consistency (Cronbach's $\alpha = 0.824$), with corrected item–total correlations ranging from 0.36 to 0.47. However, re-estimation of internal consistency in the full analytical sample indicated substantially lower reliability. Accordingly, associations involving the PMLD total score were interpreted cautiously. Although content validity was assessed, the factorial structure and broader construct validity of the modified 16-item Arabic version were not established in the present study, representing an additional measurement limitation.

2.1.2. Brief Religious Coping Scale

Religious coping was assessed using the 14-item Brief RCOPE developed by Pargament *et al.*[16] The instrument comprises two distinct seven-item subscales: PRC and NRC. PRC assesses adaptive religious coping strategies, including seeking spiritual support, benevolent religious reappraisal, religious forgiveness, and strengthening one's relationship with God. NRC assesses religious struggle, spiritual discontent, perceived abandonment by God, and negative religious interpretations of stressful experiences.

The Arabic version was adapted for the cultural and religious context of Syrian youth refugees in Jordan. The study version employed a five-point response scale ranging from 0 (not at all) to 4 (a great deal). PRC and NRC scores were calculated separately by summing their respective seven items, yielding possible subscale scores of 0–28. Higher scores indicated greater use of the corresponding religious coping strategy. The two subscales were analyzed independently rather than combined into a single religious coping score.

Content validity was assessed by five subject-matter experts, with I-CVI values ranging from 0.80 to 1.00. The S-CVI/Ave was 0.91, while the S-CVI/UA was 0.57.

A preliminary pilot study involving 30 participants demonstrated satisfactory internal consistency, with Cronbach's alpha coefficients of 0.834 for PRC and 0.802 for NRC. Corrected item–total correlations ranged from 0.49 to 0.57 for PRC and from 0.42 to 0.51 for NRC.

Internal consistency was additionally examined in the full analytical sample ($n = 460$). The resulting Cronbach's alpha coefficients were 0.014 for PRC and 0.063 for NRC, indicating substantial uncertainty regarding the internal consistency of the adapted subscales in the present sample. Consequently, findings involving religious coping were interpreted cautiously. Although content validity and preliminary reliability were evaluated, the factorial structure and broader construct validity of the adapted Arabic version were not independently established in the present study.

2.1.3. Brief Symptom Inventory-53

Psychological distress was assessed using the validated Arabic version of the BSI-53, which has been evaluated among Jordanian clinical and nonclinical populations.[17] The instrument comprises 53 items measuring nine self-reported psychological symptom dimensions: somatization, obsessive-compulsive symptoms, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. It also generates three global indices: the Global Severity Index (GSI), Positive Symptom Total (PST), and Positive Symptom Distress Index (PSDI). Participants rated the extent to which they experienced each symptom during the preceding seven days using a five-point Likert scale ranging from 0 (not at all) to 4 (extremely), with higher scores indicating greater psychological symptom severity.

The Arabic BSI-53 has demonstrated satisfactory psychometric properties, including a stable unidimensional factorial structure and measurement invariance across clinical and nonclinical populations, supporting its use as a measure of general psychological distress.[17] Scoring

was performed according to the BSI Administration, Scoring, and Procedures Manual.[18] Raw scores for the nine symptom dimensions were calculated as the arithmetic mean of their corresponding item responses, yielding scores ranging from 0 to 4. The GSI, designated as the primary psychological distress outcome, was calculated by dividing the sum of all 53 item scores by 53, with a possible range of 0–4. The PST represented the number of symptoms endorsed with a score greater than zero (range: 0–53), whereas the PSDI was calculated by dividing the sum of all symptom scores by the number of positively endorsed items.

Raw BSI-53 scores were used consistently in the primary multivariable regression model, symptom-specific regression models, and moderation analyses. This approach ensured that the dependent variables were measured on a consistent scale and avoided discrepancies arising from mixing raw scores with normatively transformed T-scores. Higher raw GSI and symptom-dimension scores indicated greater self-reported psychological symptom severity. Normative T-score thresholds were not used to establish clinical caseness or psychiatric diagnoses.

The BSI-53 is a self-report measure of psychological symptom burden rather than a diagnostic instrument. Consequently, elevated scores were interpreted as indicators of greater self-reported psychological distress and not as evidence of psychiatric disorders established through structured clinical interviews or Diagnostic and Statistical Manual of Mental Disorders criteria.

2.2. Methods

2.2.1. Study design

This article reports the quantitative cross-sectional component of the study and examines the associations of PMLD and religious coping with psychological distress among Syrian youth refugees in Jordan. The cross-sectional design enabled simultaneous assessment of PMLD, PRC, NRC, psychological distress, and relevant sociodemographic characteristics during a single observation period. The quantitative component was designed to describe the study variables, examine differences across sociodemographic characteristics, and evaluate associations among PMLD, religious coping, and psychological distress. Because the study was cross-sectional and observational, the findings were interpreted as associations rather than causal effects.

2.2.2. Study setting

The study was conducted in the Hashemite Kingdom of Jordan and included Syrian youth refugees living in both formal refugee camps and host communities. Data from camp residents were collected from Zaatari Refugee Camp in Mafraq Governorate and Azraq Refugee Camp in Zarqa Governorate. Non-camp participants were recruited from Syrian refugee populations residing in urban and rural host communities across Jordan. The inclusion of both camp and non-camp settings enabled representation of different post-migration living environments experienced by Syrian youth refugees.

2.2.3. Study population and eligibility criteria

The target population comprised male and female Syrian youth refugees aged 15–29 years who were residing in Jordan at the time of data collection. This age range was operationally defined to encompass late adolescence and young adulthood, developmental periods characterized by important transitions in education, employment, social relationships, identity formation, and increasing independence. The inclusion of participants from both refugee camps and host communities was intended to capture variation in post-migration living circumstances.

Participants were eligible if they (i) were aged 15–29 years; (ii) were Syrian nationals who had fled Syria following the outbreak of the Syrian conflict in 2011 and were residing in Jordan at the time of recruitment; (iii) were able to read and write in Arabic; and (iv) provided the required informed consent or assent. For participants aged 15–17 years, written parental or guardian consent and the participant's written assent were obtained before participation.

Exclusion criteria included non-Syrian nationality, inability to read or write in Arabic, and a previously established formal diagnosis of a mental disorder. Previous psychiatric diagnoses were ascertained through participant self-report during eligibility screening. Participants who reported having previously received a formal mental disorder diagnosis were excluded. No independent verification through medical records, structured diagnostic interviews, or clinical examinations was undertaken.

Importantly, the diagnosis-related exclusion criterion referred to a previously recognized psychiatric disorder rather than current psychological symptoms. Participants without a reported previous diagnosis remained eligible regardless of their current self-reported psychological symptom levels. The BSI-53 was subsequently administered to assess psychological distress and was not used to determine eligibility or establish psychiatric diagnoses.

Because previous psychiatric diagnoses were assessed through self-report, the possibility of underreporting, recall bias, or inclusion of individuals with previously undiagnosed mental disorders could not be excluded. Furthermore, excluding participants with previously

diagnosed disorders may have introduced selection bias and limited the generalizability of the findings to the broader Syrian refugee youth population. These considerations were taken into account when interpreting the study findings.

2.3. Sampling and data collection

2.3.1. Sample size and sampling technique

The sample size was determined during the study-planning stage using G*Power version 3.1.9.4. The initial calculation was based on the originally planned inferential analyses, assuming a medium effect size (f = 0.25), a significance level of $\alpha = 0.05$, and a statistical power of 0.95. An initial sample-size target of 400 participants was established. To account for anticipated non-response and incomplete questionnaires, an additional 15% (60 participants) was incorporated, yielding a final recruitment target of 460 participants.

The original sample-size calculation was intended to inform recruitment for the planned group comparisons rather than to determine statistical power for the subsequent multivariable regression and moderation analyses. The primary regression model included three principal explanatory variables (PMLD, PRC, and NRC) and five sociodemographic covariates represented by six regression parameters. Educational attainment was grouped into three categories and represented by two dummy variables, while age, gender, monthly family income, and place of residence each contributed one parameter. The moderation models additionally incorporated an interaction term. Although the final sample of 460 participants provided a substantial analytical sample relative to the number of model parameters, the original calculation was not specifically designed to detect small interaction effects. Accordingly, the moderation analyses were considered exploratory, and nonsignificant interaction findings were interpreted cautiously rather than as definitive evidence of an absence of moderation.

A purposive, non-probability sampling approach was employed to recruit Syrian youth refugees aged 15–29 years who met the predefined eligibility criteria. Recruitment was conducted in both formal refugee camps and host-community settings to include participants experiencing different post-migration living circumstances. Within the refugee camps, participants were recruited from Zaatari Refugee Camp in Mafraq Governorate and Azraq Refugee Camp in Zarqa Governorate. Eligible individuals who were accessible during the officially authorized data-collection period were approached and invited to participate voluntarily.

Outside the refugee camps, recruitment was undertaken in urban and rural host communities across Jordan where Syrian refugee populations were residing. The researcher approached individuals within the target age range, screened them against the eligibility criteria, explained the study objectives and procedures, and invited eligible individuals to participate. Written informed consent or assent, as applicable, was obtained before questionnaire administration. No random selection or probability-based sampling procedure was employed.

A total of 550 individuals were approached, of whom 540 underwent eligibility screening. Among those screened, 510 met the inclusion criteria, while 30 were ineligible. Seventeen eligible individuals declined participation, leaving 493 participants who provided consent or assent and began completing the questionnaire. Subsequently, 33 incomplete questionnaires were excluded, resulting in a final analytical sample of 460 participants. The proportion of eligible individuals included in the final analysis was 90.2% (460/510). Participant recruitment, screening, eligibility assessment, and inclusion are presented in Figure 1.

Although the study included participants from both camp and community settings and achieved its recruitment target, the purposive sampling approach did not provide a probability-based representative sample of all Syrian refugee youth residing in Jordan. Consequently, the generalizability of the findings to the wider refugee population should be interpreted with consideration of potential selection bias and differences in recruitment accessibility.

2.3.2. Data collection procedure

Data collection was conducted between 20 August and 20 September 2025, following ethical approval and the acquisition of the required administrative permissions from the relevant authorities in Malaysia and Jordan. Participants were recruited from Zaatari Refugee Camp in Mafraq Governorate, Azraq Refugee Camp in Zarqa Governorate, and urban and rural host communities across Jordan. Recruitment was undertaken within the officially authorized data-collection period and in accordance with the access conditions established by the relevant authorities. In Azraq Refugee Camp, academic data-collection visits were permitted between 9:00 a.m. and 3:00 p.m., with Villages 2 and 5 excluded in accordance with the official authorization.

Potential participants were approached in the designated recruitment settings and screened against the predefined eligibility criteria. Screening included verification of age, Syrian nationality, residence in Jordan, Arabic literacy, and self-reported history of a previously diagnosed mental

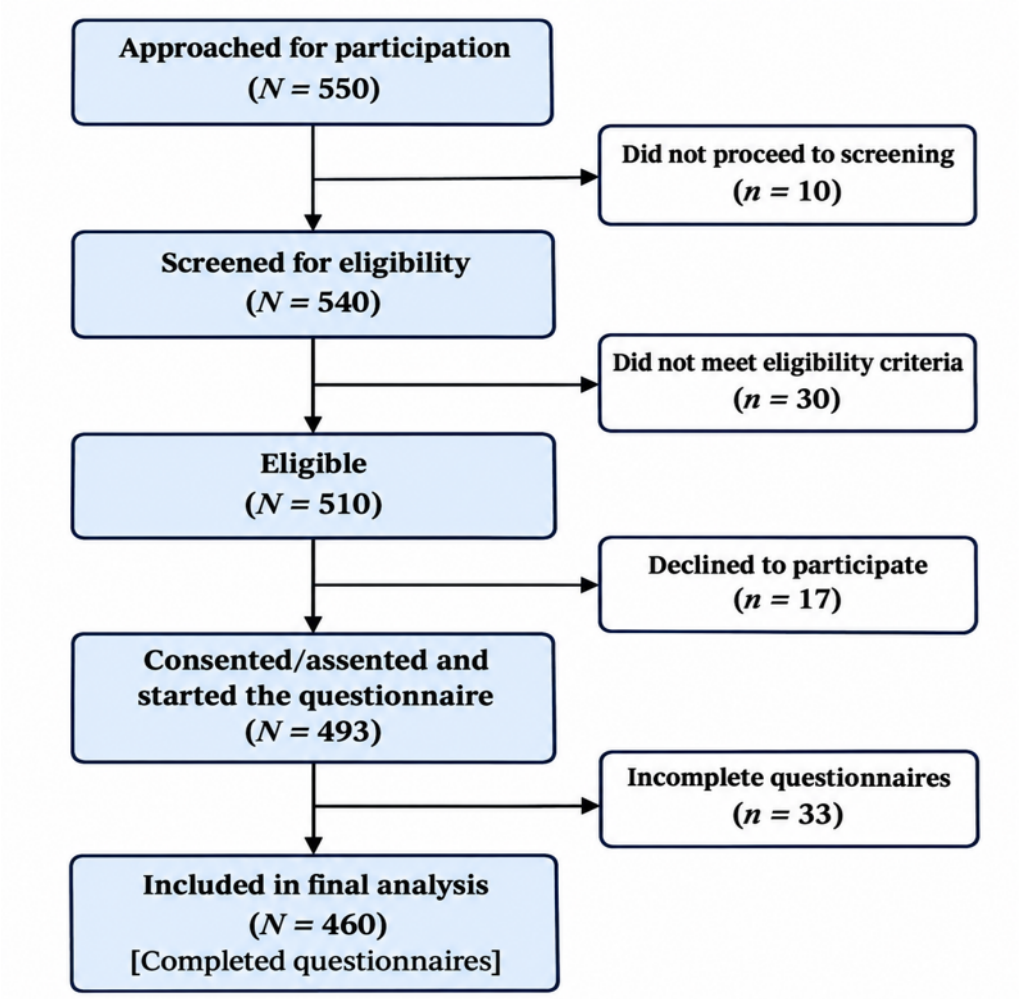


Figure 1. Participant flow through recruitment and final analysis

disorder. Previous psychiatric diagnoses were ascertained through participant self-report rather than medical record verification or structured clinical interviews. Individuals who satisfied the eligibility criteria were informed about the study objectives, procedures, voluntary nature of participation, confidentiality, and their right to withdraw without consequences.

Written informed consent was obtained from participants aged 18 years or older. For participants aged 15–17 years, written parental or guardian consent and the participant's written assent were obtained before questionnaire administration. Following consent or assent, participants completed an Arabic questionnaire comprising the sociodemographic information form, the BSI-53, the PMLD Scale, and the Brief RCOPE. All instruments were administered in Arabic to ensure linguistic appropriateness for the target population.

Before the main data collection, a pilot study was conducted among 30 Syrian youth refugees who met the eligibility criteria. The pilot study assessed the feasibility of the data-collection procedures, questionnaire clarity, cultural appropriateness of the adapted instruments, and preliminary internal consistency. Feedback from the pilot assessment informed the finalization of the study questionnaires. Pilot participants were not included in the final analytical sample.

Participant recruitment and inclusion are illustrated in Figure 1. A total of 550 individuals were approached, of whom 540 underwent eligibility screening. Among those screened, 510 fulfilled the inclusion criteria, whereas 30 were considered ineligible. Of the 510 eligible individuals, 17 declined participation. Consequently, 493 participants provided the required informed consent or assent and initiated questionnaire completion. Thirty-

three questionnaires were excluded because of incomplete responses, leaving 460 participants in the final analytical sample.

The final analytical sample represented 90.2% of eligible individuals and 93.3% of participants who initiated questionnaire completion. The proportion of incomplete questionnaires was 6.7% (33/493). Following the exclusion of incomplete questionnaires, the retained analytical dataset contained no missing values in the study variables (0.0%); therefore, no statistical imputation was performed. All descriptive, correlation, regression, and moderation analyses were conducted using the final sample of 460 participants.

2.3.3. Variables and measurement

The principal explanatory variables were PMLD and religious coping. PMLD was represented by the total score of the 16-item PMLD Scale, with higher scores indicating greater post-migration difficulties. Religious coping was examined separately as PRC and NRC using their respective Brief RCOPE subscale scores. Psychological distress was the principal outcome and was represented by normative BSI-53 T-scores across the nine symptom dimensions and three global indices, including the GSI as the overall indicator of psychological distress. Sociodemographic characteristics included gender, age, place of residence, educational attainment, family size, and monthly family income.

For inferential analyses involving educational attainment, education was consolidated into three categories: lower secondary, comprising no formal education, primary education, and lower secondary education; upper secondary; and bachelor or higher, comprising some tertiary/technical and vocational education and bachelor's degree or higher.

2.4. Statistical analysis

Quantitative data were analyzed using IBM Statistical Package for Social Sciences software version 26, with additional verification of item scoring and the principal statistical models performed using Python statistical libraries. Data were examined for completeness, coding accuracy, and consistency before analysis. Descriptive statistics, including frequencies, percentages, means, standard deviations (SDs), and ranges, were used to summarize participants' sociodemographic characteristics, PMLD, PRC, NRC, and psychological distress.

The PMLD total score was calculated by summing responses across the 16 retained items, yielding a possible range of 0–64, with higher scores indicating greater post-migration adversity. PRC and NRC scores were calculated separately by summing their respective seven-item subscales, each with a possible range of 0–28. Internal consistency was assessed using Cronbach's alpha in the full analytical sample.

Psychological distress was assessed using the BSI-53 according to the established scoring procedures.[18] Each item was scored from 0 to 4, with higher scores indicating greater self-reported symptom severity. Raw scores for the nine symptom dimensions were calculated as the mean of their corresponding item responses. The GSI was calculated by dividing the sum of all 53 item scores by 53, yielding a possible range of 0–4. The PST represented the number of positively endorsed symptoms, whereas the PSDI was calculated by dividing the total symptom score by the number of positively endorsed items. Raw BSI-53 scores were used consistently in inferential analyses to avoid discrepancies arising from mixing raw scores with normatively transformed T-scores. The BSI-53 was interpreted as a measure of self-reported psychological symptom severity rather than a diagnostic instrument.

Independent-samples *t*-tests were used to examine differences in study variables according to gender and place of residence. One-way analysis of variance (ANOVA) was used to examine differences across educational groups, with Scheffé post hoc comparisons performed when the omnibus ANOVA was statistically significant. Between-group effect sizes were estimated using Cohen's *d* for two-group comparisons and eta-squared (η^2) for ANOVA. Pearson product-moment correlation coefficients (*r*) were calculated to examine bivariate associations among PMLD, PRC, NRC, and psychological distress. Spearman rank correlations were additionally used as sensitivity analyses to examine the robustness of the observed bivariate associations.

Multivariable linear regression analyses were conducted to examine the independent associations of PMLD, PRC, and NRC with psychological distress. Raw GSI was designated as the primary dependent variable. PMLD total score, PRC, and NRC were entered simultaneously as the principal explanatory variables, with adjustment for age, gender, educational attainment, monthly family income, and place of residence. Educational attainment was represented by two dummy variables, with lower-secondary education serving as the reference category. Equivalent multivariable regression models were specified separately for the nine BSI-53 symptom dimensions using the same explanatory variables and covariates. Unstandardized regression coefficients (B), standardized coefficients (β), standard errors (SEs), 95% confidence intervals (CIs), and *p*-values were used to summarize the associations. Model-level statistics included the *F*-statistic,

coefficient of determination (R^2), and adjusted R^2.

Regression assumptions were evaluated through graphical examination and formal diagnostic procedures. Linearity and model specification were assessed using residual-versus-fitted plots and the Ramsey regression equation specification error test. Homoscedasticity was evaluated using residual plots and the Breusch–Pagan test, while residual distribution was examined using Q–Q plots and the Jarque–Bera test. Multicollinearity was assessed using variance inflation factors. Potentially influential observations were examined using standardized residuals, leverage values, and Cook's distance. Sensitivity analyses of the primary regression model were conducted using heteroscedasticity-consistent SEs and by repeating the analysis after excluding observations with Cook's distance exceeding $4/n$. The complete-case model remained the primary analysis, with sensitivity analyses used to evaluate the stability of the findings.

Moderation analyses were conducted to examine whether religious coping modified the association between PMLD and psychological distress. Two separate multivariable interaction models were fitted using raw GSI as the dependent variable. Continuous PMLD, PRC, and NRC scores were mean-centered before constructing the interaction terms. Each moderation model included PMLD, PRC, NRC, the relevant interaction term (PMLD × PRC or PMLD × NRC), and the same sociodemographic covariates included in the primary regression model. Interaction coefficients, 95% CIs, and p-values were reported. The additional variance explained by each interaction was assessed using the change in R^2 (ΔR^2) relative to the corresponding model without the interaction term.

A hierarchical approach was adopted to address multiple testing. GSI was designated as the primary psychological distress outcome. Bonferroni correction was applied to the three principal explanatory-variable coefficients in the primary GSI regression model. The 27 exposure coefficients across the nine secondary symptom-specific regression models were treated as a separate family of tests. The two moderation interaction terms constituted an additional family. For bivariate analyses, multiplicity adjustments were applied within explicitly defined families of comparisons, including the 12 BSI-53 outcomes for each sociodemographic comparison and the 36 correlations between the three principal explanatory variables and the 12 BSI-53 outcomes. Both unadjusted and Bonferroni-adjusted p-values were reported where applicable. All statistical tests were two-sided, with statistical significance evaluated at $p < 0.05$ after the relevant correction.

Of the 493 participants who initiated the questionnaire, 33 provided incomplete questionnaires and were excluded before analysis. The final analytical sample comprised 460 participants with complete data for all variables included in the analyses (0.0% missing). Consequently, no statistical imputation was required. Given the cross-sectional observational design, the findings were interpreted as statistical associations rather than evidence of causality.

2.5. Ethical considerations

Ethical approval was obtained from the Research Ethics Committee of Universiti Kebangsaan Malaysia before data collection (Ethics Reference No. JEP-2025-382). Official authorization to conduct the study in Jordan, including data collection within refugee camps, was obtained from the Jordanian Ministry of Interior and relevant authorities. Participation was voluntary, and participants received information regarding the study objectives, procedures, potential benefits and risks, confidentiality, and their right to withdraw without consequences. Written informed consent was obtained from participants aged 18 years or older. For participants aged 15–17 years, written parental or guardian consent and the participant's written assent were obtained before participation.

Confidentiality and anonymity were maintained throughout the study, and identifying information was not collected on the study questionnaires. Data were coded, stored securely, and restricted to the researcher and supervisory team. Participants were informed that they could decline to answer any question or discontinue participation. Participants showing signs of severe psychological distress during data collection could be referred to appropriate mental health services using the study's established referral procedure.

3. Results

3.1. Participant characteristics

The analytical sample comprised 460 Syrian refugee youth (251 males [54.6%] and 209 females [45.4%]). Of these, 196 (42.6%) resided inside refugee camps and 264 (57.4%) in host communities. The mean age was 21.71 years (SD = 3.52; range: 15–29 years), mean family size was 6.51 (SD = 1.61), and mean monthly family income was 257.75 Jordanian dinars (SD = 83.51). Upper-secondary education was the most frequently reported level (n = 242, 52.6%; Table 1).

3.2. Post-migration living difficulties

The 16-item PMLD sum score was 35.20 ± 4.95 (observed range: 20–48), corresponding to a mean item score of 2.20 (SD = 0.31). The highest-rated difficulties were insufficient money for basic necessities (item 11), difficulty obtaining

Table 1. Sociodemographic characteristics of participants (n = 460)

Characteristics	n (%) or mean (standard deviation)	Range
Gender		
Male	251 (54.6)	—
Female	209 (45.4)	—
Residence		
Inside camp	196 (42.6)	—
Outside camp	264 (57.4)	—
Education		
No formal	3 (0.7)	—
Primary	20 (4.3)	—
Lower secondary	76 (16.5)	—
Upper secondary	242 (52.6)	—
Some tertiary/technical and vocational education and training	100 (21.7)	—
Bachelor or higher	19 (4.1)	—
Age (years)	21.71 ± 3.52	15–29
Family size	6.51 ± 1.61	3–12
Monthly family income (Jordanian dinar)	257.75 ± 83.51	85–590

Note: Percentages are based on the full analytical sample.

financial assistance (item 9), worries about family in Syria (item 2), and employment difficulties (item 6). Ethnic conflict was the least-endorsed item (Table 2).

3.3. Religious coping

Positive religious coping averaged 19.01 ± 3.00 (range: 10–27), and NRC averaged 8.08 ± 3.29 (range: 0–18). Corresponding per-item means were 2.72 and 1.15, respectively, indicating higher endorsement of PRC items. Both subscales showed low internal consistency in the full sample (Table 3).

3.4. Psychological distress

On the BSI-53 raw 0–4 metric, the mean GSI was 1.47 ± 0.17 (range: 0.98–1.96). Mean symptom-dimension scores ranged from 1.35 to 1.67. Hostility had the highest mean among the nine dimensions, while paranoid ideation and phobic anxiety had the lowest means. The mean PST was 38.86 ± 3.38, and the mean PSDI was 2.00 ± 0.16 (Table 4).

3.5. Sociodemographic differences in post-migration living difficulties

Females had higher PMLD scores than males (36.30 ± 5.00 vs. 34.29 ± 4.71; $t[458] = -4.44$, $p < 0.001$). Community residents also had higher scores than camp residents (36.29 ± 4.97 vs. 33.74 ± 4.52; $t[458] = -5.64$, $p < 0.001$). PMLD differed across educational groups ($F[2, 457] = 18.48$, $p < 0.001$, $\eta^2 = 0.075$). Scheffé comparisons identified differences between each pair of educational categories (Table 5).

3.6. Sociodemographic differences in religious coping

Positive religious coping and NRC did not differ significantly by gender or residence. PRC did not differ by education, whereas NRC varied across educational groups (Table 6). Scheffé comparisons indicated higher NRC scores in the lower-secondary group than in the upper-secondary and bachelor-or-higher groups; the two higher education groups did not differ significantly.

3.7. Sociodemographic differences in psychological distress

Using raw BSI-53 scores, no gender comparison or residence comparison across the 12 symptom dimensions and global indices remained statistically significant after

Table 2. Post-migration living difficulties, ordered by mean item score (*n* = 460)

Item	Difficulty	Mean (standard deviation)
PM11	Not enough money for food, rent, or necessary clothes	2.72 (1.13)
PM9	Difficulties obtaining financial assistance	2.67 (1.14)
PM2	Worries about family back home	2.66 (1.12)
PM6	Difficulties with employment	2.65 (1.18)
PM13	Concerns about access to medical treatment	2.34 (1.24)
PM3	Unable to return to home country in an emergency	2.33 (1.27)
PM5	Separation from family	2.32 (1.23)
PM7	Communication difficulties	2.32 (1.23)
PM12	Discrimination	2.26 (1.23)
PM8	Fear of future return to country of origin	2.26 (1.24)
PM1	Loneliness, boredom, or isolation	2.26 (1.29)
PM10	Difficulty finding appropriate accommodation	2.25 (1.22)
PM15	Not being recognized as a refugee	1.70 (1.28)
PM14	Difficulties in interviews with immigration officials	1.68 (1.24)
PM4	Difficulty learning the host-country language	1.68 (1.23)
PM16	Ethnic conflicts	1.12 (1.15)
PMLD total	16-item sum score	35.20 (4.95)
Mean item score	Total divided by 16	2.20 (0.31)

Note: Higher scores indicate greater endorsed difficulty under the 0–4 numerical coding. Full-sample internal consistency was low (Cronbach's α = 0.038), which limits interpretation of the total score as a coherent scale. Exploratory item-rank comparisons indicated variation by demographic group: insufficient money for basic necessities was the highest-rated item among males and camp residents, whereas worry about family in Syria ranked first among females and inability to return to Syria in an emergency ranked first among community residents. These rankings describe item means and were not treated as confirmatory subgroup tests.

Table 3. Positive and negative religious coping (*n* = 460)

Subscale	Sum score, mean (standard deviation)	Observed range	Item mean	Cronbach's α
Positive religious coping (7 items)	19.01 (3.00)	10–27	2.72	0.014
Negative religious coping (7 items)	8.08 (3.29)	0–18	1.15	0.063

Note: Each subscale has a theoretical range of 0–28. Low full-sample reliability requires cautious interpretation of null and non-null associations.

Bonferroni correction (12 comparisons per family). The unadjusted gender comparison for hostility (p = 0.019) and residence comparison for obsession–compulsion (p = 0.008) did not survive adjustment (Tables 7 and 8). The raw GSI means were virtually identical among males and females (1.468 vs. 1.469), resolving the discrepancy with the previously reported normative-score contrast. None of the three global indices differed significantly across educational groups (Table 9).

Table 4. Raw Brief Symptom Inventory-53 symptom scores and global indices (*n* = 460)

BSI-53 dimension/index	Mean (standard deviation)	Observed range
Somatization	1.48 (0.44)	0.43–2.86
Obsession–compulsion	1.46 (0.48)	0.17–3.00
Interpersonal sensitivity	1.61 (0.62)	0.00–3.50
Depression	1.48 (0.51)	0.17–3.00
Anxiety	1.37 (0.46)	0.17–2.83
Hostility	1.67 (0.56)	0.20–3.40
Phobic anxiety	1.36 (0.52)	0.00–2.80
Paranoid ideation	1.35 (0.52)	0.00–3.20
Psychoticism	1.40 (0.51)	0.20–2.60
GSI	1.47 (0.17)	0.98–1.96
PST	38.86 (3.38)	29–47
PSDI	2.00 (0.16)	1.57–2.43

Note: Dimension scores and GSI range from 0 to 4; PST ranges from 0 to 53; PSDI is the mean nonzero symptom score. Values are raw scores, not normative T-scores. The instrument assesses symptoms and does not establish psychiatric diagnoses. These values are raw self-reported symptom scores. The previously presented normative T-score comparisons and clinical-threshold labels were removed because their conversion could not be reproduced consistently from the verified raw scoring. Full-sample internal consistency for the 53-item composite was low (α = 0.087), warranting substantial caution in interpreting the absolute scores and their associations.
Abbreviations: GSI: Global Severity Index; PSDI: Positive Symptom Distress Index; PST: Positive Symptom Total.

Table 5. Post-migration living difficulties scores by sociodemographic characteristics

Variable	Mean ± SD	Test	*p*	Effect size
Gender				
Male	34.29 ± 4.71	$t = -4.44$	<0.001	$d = -0.42$
Female	36.30 ± 5.00			
Residence				
Inside camp	33.74 ± 4.52	$t = -5.64$	<0.001	$d = -0.53$
Outside camp	36.29 ± 4.97			
Education				
Lower secondary	33.35 ± 4.26	$F = 18.48$	<0.001	$\eta^2 = 0.075$
Upper secondary	34.96 ± 5.08			
Bachelor or higher	37.23 ± 4.50			

Note: Sex contrast is male minus female; residence contrast is inside minus outside. Male–female mean difference = −2.01 (95% confidence interval: −2.91 to −1.12); inside–outside difference = −2.55 (95% confidence interval: −3.44 to −1.66). Scheffé comparisons (lower vs. upper secondary; lower vs. higher; upper vs. higher): $p = 0.019$, <0.001, <0.001, respectively.

Table 6. Religious coping by sociodemographic characteristics

Variable	PRC mean ± SD	NRC mean ± SD	PRC test	PRC *p*	NRC test	NRC *p*
Gender						
Male	18.99 ± 3.09	8.22 ± 3.29	$t = -0.14$	0.885	t = 1.02	0.308
Female	19.03 ± 2.90	7.91 ± 3.28				
Residence						
Inside camp	19.19 ± 3.02	8.34 ± 3.29	$t = 1.12$	0.262	$t = 1.44$	0.150
Outside camp	18.87 ± 2.98	7.89 ± 3.28				
Education						
Lower secondary	19.09 ± 2.78	8.99 ± 4.00	$F = 0.76$	0.467	$F = 5.45$	0.005
Upper secondary	18.85 ± 3.08	7.95 ± 3.01				
Bachelor or higher	19.25 ± 3.02	7.58 ± 3.04				

Note: Scheffé NRC comparisons (lower vs. upper secondary, lower vs. bachelor/higher, upper vs. bachelor/higher): $p = 0.029$, 0.007, 0.590, respectively. All *p*-values in this table are unadjusted, and the analyses are descriptive/exploratory.
Abbreviations: NRC: Negative religious coping; PRC: Positive religious coping; SD: Standard deviation.

Table 7. Raw Brief Symptom Inventory-53 scores by gender (*n* = 460)

Dimension/index	Male mean ± SD	Female mean ± SD	*t*	*p*	*p* adj.	*d*
Somatization	1.49 ± 0.44	1.48 ± 0.45	0.17	0.866	1.000	0.02
Obsession–compulsion	1.46 ± 0.48	1.46 ± 0.48	−0.03	0.979	1.000	−0.00
Interpersonal sensitivity	1.59 ± 0.65	1.63 ± 0.58	−0.60	0.549	1.000	−0.06
Depression	1.46 ± 0.49	1.50 ± 0.53	−0.78	0.435	1.000	−0.07
Anxiety	1.38 ± 0.45	1.35 ± 0.48	0.64	0.523	1.000	0.06
Hostility	1.61 ± 0.52	1.74 ± 0.59	−2.36	0.019	0.226	−0.22
Phobic anxiety	1.38 ± 0.52	1.33 ± 0.52	0.87	0.386	1.000	0.08
Paranoid ideation	1.35 ± 0.56	1.35 ± 0.48	−0.01	0.995	1.000	−0.00
Psychoticism	1.42 ± 0.50	1.37 ± 0.52	1.22	0.223	1.000	0.11
GSI	1.47 ± 0.17	1.47 ± 0.17	−0.02	0.983	1.000	−0.00
PST	38.95 ± 3.43	38.75 ± 3.33	0.63	0.526	1.000	0.06
PSDI	2.00 ± 0.16	2.01 ± 0.16	−0.75	0.454	1.000	−0.07

Note: Independent-samples *t*-tests (df = 458). Bonferroni-adjusted *p*-values calculated within the 12-outcome family. Positive *d* indicates a higher mean in the first category; raw Brief Symptom Inventory-53 scores are reported.
Abbreviations: GSI: Global Severity Index; PSDI: Positive Symptom Distress Index; PST: Positive Symptom Total; SD: Standard deviation.

Table 8. Raw Brief Symptom Inventory-53 scores by place of residence (*n* = 460)

Dimension/index	Inside camp mean ± SD	Outside camp mean ± SD	*t*	*p*	*p* adj.	*d*
Somatization	1.47 ± 0.46	1.49 ± 0.43	−0.39	0.700	1.000	−0.04
Obsession–compulsion	1.53 ± 0.50	1.41 ± 0.46	2.68	0.008	0.092	0.25
Interpersonal sensitivity	1.56 ± 0.62	1.64 ± 0.63	−1.31	0.191	1.000	−0.12
Depression	1.49 ± 0.51	1.47 ± 0.50	0.45	0.655	1.000	0.04
Anxiety	1.39 ± 0.46	1.36 ± 0.46	0.71	0.481	1.000	0.07
Hostility	1.70 ± 0.55	1.65 ± 0.56	0.96	0.337	1.000	0.09
Phobic anxiety	1.34 ± 0.56	1.37 ± 0.49	−0.68	0.494	1.000	−0.06
Paranoid ideation	1.34 ± 0.51	1.36 ± 0.53	−0.50	0.619	1.000	−0.05
Psychoticism	1.35 ± 0.48	1.43 ± 0.53	−1.79	0.074	0.889	−0.17
GSI	1.47 ± 0.16	1.47 ± 0.18	−0.22	0.828	1.000	−0.02
PST	38.81 ± 3.36	38.90 ± 3.41	−0.30	0.765	1.000	−0.03
PSDI	2.00 ± 0.15	2.00 ± 0.17	0.14	0.890	1.000	0.01

Note: Independent-samples *t*-tests (df = 458). Bonferroni-adjusted *p*-values calculated within the 12-outcome family. Positive d indicates a higher mean in the first category; raw Brief Symptom Inventory-53 scores are reported.
Abbreviations: GSI: Global Severity Index; PSDI: Positive Symptom Distress Index; PST: Positive Symptom Total; SD: Standard deviation.

Table 9. Raw Brief Symptom Inventory-53 global indices across educational groups (*n* = 460)

Index	Lower sec. (*n* = 99)	Upper sec. (*n* = 242)	Higher (*n* = 119)	*F*(2, 457)	*p*	η^2
GSI	1.44 ± 0.18	1.47 ± 0.17	1.48 ± 0.16	1.87	0.155	0.008
PST	38.73 ± 3.21	38.82 ± 3.46	39.06 ± 3.38	0.30	0.742	0.001
PSDI	1.97 ± 0.16	2.01 ± 0.16	2.02 ± 0.16	2.87	0.058	0.012

Note: Higher education category combines some tertiary/technical and vocational education and training and bachelor's degree or higher. Raw indices are reported. All *p*-values are unadjusted exploratory tests.
Abbreviations: GSI: Global Severity Index; PSDI: Positive Symptom Distress Index; PST: Positive Symptom Total.

3.8. Associations between post-migration living difficulties, religious coping, and psychological distress

Post-migration living difficulties were not significantly correlated with raw GSI (r = −0.022, 95% CI: −0.113 to 0.070, p = 0.637). Unlike the earlier normative-score table, the revised raw-score correlations did not support the previously reported inverse PMLD–GSI association. None of the 36 correlations between PMLD, PRC, or NRC and the 12 BSI-53 outcomes survived Bonferroni correction (Table 10). PMLD and NRC had a small inverse unadjusted correlation (r = −0.096, p 0.039), which should not be interpreted as a robust association.

3.9. Multivariable regression analyses

The primary adjusted GSI model (n = 460; nine regression parameters plus intercept) explained 1.99% of raw GSI variance (R^2 = 0.020; adjusted R^2 = 0.000; F[9, 450] = 1.02, p = 0.426). Neither PMLD (B = −0.0017, 95% CI: −0.0052 to 0.0018, p = 0.351), PRC (B = 0.0025, p = 0.345), nor NRC (B = 0.0005, p = 0.848) was independently associated

Table 10. Pearson correlations of PMLD, PRC, and NRC with raw BSI-53 outcomes (n = 460)

Outcome	PMLD r [95% CI]	p	PRC r [95% CI]	p	NRC r [95% CI]	p
Somatization	0.025 [−0.07, 0.12]	0.593	0.033 [−0.06, 0.12]	0.484	−0.010 [−0.10, 0.08]	0.827
Obsession–compulsion	−0.079 [−0.17, 0.01]	0.090	0.001 [−0.09, 0.09]	0.980	0.020 [−0.07, 0.11]	0.676
Interpersonal sensitivity	0.013 [−0.08, 0.10]	0.787	−0.022 [−0.11, 0.07]	0.642	0.032 [−0.06, 0.12]	0.489
Depression	−0.047 [−0.14, 0.05]	0.319	−0.002 [−0.09, 0.09]	0.973	0.000 [−0.09, 0.09]	0.994
Anxiety	0.048 [−0.04, 0.14]	0.307	0.028 [−0.06, 0.12]	0.548	−0.030 [−0.12, 0.06]	0.520
Hostility	−0.064 [−0.15, 0.03]	0.172	0.092 [0.00, 0.18]	0.047	−0.005 [−0.10, 0.09]	0.907
Phobic anxiety	0.055 [−0.04, 0.15]	0.238	−0.034 [−0.13, 0.06]	0.467	−0.052 [−0.14, 0.04]	0.266
Paranoid ideation	0.048 [−0.04, 0.14]	0.301	−0.051 [−0.14, 0.04]	0.271	0.020 [−0.07, 0.11]	0.671
Psychoticism	−0.042 [−0.13, 0.05]	0.367	−0.017 [−0.11, 0.07]	0.716	−0.094 [−0.18, −0.00]	0.043
GSI	−0.022 [−0.11, 0.07]	0.637	0.037 [−0.05, 0.13]	0.433	−0.007 [−0.10, 0.08]	0.881
PST	−0.018 [−0.11, 0.07]	0.692	0.025 [−0.07, 0.12]	0.599	−0.005 [−0.10, 0.09]	0.910
PSDI	−0.011 [−0.10, 0.08]	0.812	0.026 [−0.07, 0.12]	0.578	−0.002 [−0.09, 0.09]	0.974

Note: Two-sided unadjusted p-values shown. Bonferroni correction across 36 exposure–outcome correlations requires $p < 0.00139$; none met this threshold. Sensitivity analysis using Spearman rank correlation did not materially change the PMLD–GSI result ($\rho = -0.008$, $p = 0.866$).
Abbreviations: GSI: Global Severity Index; NRC: Negative religious coping; PMLD: Post-migration living difficulties; PSDI: Positive Symptom Distress Index; PRC: Positive religious coping; PST: Positive Symptom Total.

with GSI. The adjusted sex coefficient was also near zero, consistent with the raw-score group comparison. Full primary-model estimates are shown in Table 11.

3.10. Moderation of the post-migration living difficulties–distress association by religious coping

In separate adjusted models including PMLD, both religious coping scores, the same sociodemographic covariates, and a mean-centered interaction term, neither PRC nor NRC modified the association between PMLD and raw GSI. For the PMLD × PRC interaction (B = −0.00011, 95% CI: −0.00131 to 0.00109, $p = 0.860$; $\Delta R^2 < 0.001$). For PMLD × NRC, B = −0.00061, 95% CI: −0.00153 to 0.00031, $p = 0.190$ ($\Delta R^2 = 0.0037$). Neither interaction

Table 11. Adjusted linear regression model for raw Global Severity Index (n = 460)

Explanatory variable	B	Standard error	β	95% CI for B	p
Constant	1.4075	0.0986	—	[1.2136, 1.6013]	<0.001
Age	−0.0006	0.0029	−0.013	[−0.0063, 0.0050]	0.826
Female (vs. male)	0.0007	0.0164	0.002	[−0.0316, 0.0330]	0.965
Outside camp (vs. inside)	−0.0079	0.0189	−0.023	[−0.0450, 0.0291]	0.674
Monthly income (Jordinian dinar)	0.00021	0.00011	0.100	[−0.00001, 0.00042]	0.062
Upper secondary (vs. lower)	0.0379	0.0249	0.110	[−0.0110, 0.0868]	0.128
Tertiary or higher (vs. lower)	0.0487	0.0292	0.124	[−0.0086, 0.1060]	0.096
PMLD	−0.0017	0.0018	−0.048	[−0.0052, 0.0018]	0.351
PRC	0.0025	0.0027	0.045	[−0.0028, 0.0078]	0.345
NRC	0.0005	0.0025	0.009	[−0.0044, 0.0054]	0.848

Note: $F(9, 450) = 1.02$, $p = 0.426$; $R^2 = 0.020$; adjusted $R^2 = 0.000$. Reference categories: male, inside camp, lower-secondary education. Bonferroni-adjusted p-values for the PMLD, PRC, and NRC coefficients were all 1.000 (family of three). Equivalent models for the nine raw BSI-53 symptom dimensions did not identify any exposure coefficient that remained statistically significant after Bonferroni correction across the 27 PMLD/PRC/NRC tests. The unadjusted PRC–hostility coefficient ($p = 0.044$) was not significant after adjustment (Table 12). Model-level R^2 values ranged from 0.010 to 0.044. Complete covariate estimates for these secondary models are provided in Table A1.
Abbreviations: BSI-53: Brief Symptom Inventory-53; CI: Confidence interval; NRC: Negative religious coping; PMLD: Post-migration living difficulties; PRC: Positive religious coping.

met the Bonferroni threshold for two tests (Table 13).

4. Discussion

This cross-sectional study examined PMLD, PRC, NRC, and self-reported psychological symptoms among 460 Syrian refugee youth living in camps and host communities in Jordan. Financial and family-related difficulties were prominent, and PRC was endorsed more frequently than NRC. Following verification of the item-level data, raw BSI-53 scores were used consistently throughout the analyses. Neither PMLD nor either religious coping subscale showed a statistically significant association with the raw GSI in the primary bivariate or adjusted analyses, and neither religious coping subscale significantly moderated the PMLD–GSI association. These findings should be interpreted in light of the very low full-sample internal consistency observed for the composite measures.

The most highly rated post-migration difficulties involved insufficient money for basic needs, difficulties obtaining financial assistance, worries about family members in Syria, and employment-related challenges. This pattern is compatible with literature identifying persistent economic insecurity, family separation, and obstacles to services as important features of refugee experiences after displacement.[19-22] The comparatively lower endorsement of some language-related and administrative items does not imply that resettlement was uncomplicated; rather, the specific types of difficulty varied within this Jordanian context. Previous work with Syrian refugees likewise situates distress and adaptation within ongoing social, economic, and relational circumstances.[23,24] Because the adapted PMLD total score showed low internal consistency, individual item profiles provide a more defensible description of reported difficulties than strong inferences based on the aggregate score alone.

On the raw BSI-53 metric, the mean GSI was 1.47 (SD = 0.17), and the hostility dimension had the highest mean symptom score. These are self-reported symptom measurements, not normative T-scores, clinical prevalence estimates, or psychiatric diagnoses. In particular, endorsement of items within the BSI psychoticism dimension must not be interpreted as evidence of a psychotic disorder. The previously reported clinical-threshold claims have therefore been removed because the normative T-score conversion could not be verified consistently. Evidence concerning BSI measurement

Table 12. Main exposures in adjusted symptom-specific regression models (n = 460)

Outcome	Exposure	B [95% CI]	β	p	p adj.	R^2
Somatization	PMLD	0.0001 [−0.009, 0.009]	0.001	0.987	1.000	0.015
	PRC	0.0055 [−0.008, 0.019]	0.037	0.434	1.000	
	NRC	0.0010 [−0.012, 0.014]	0.008	0.873	1.000	
Obsession–compulsion	PMLD	−0.0063 [−0.016, 0.003]	−0.065	0.203	1.000	0.033
	PRC	−0.0015 [−0.016, 0.013]	−0.009	0.847	1.000	
	NRC	0.0018 [−0.012, 0.015]	0.012	0.794	1.000	
Interpersonal sensitivity	PMLD	−0.0014 [−0.014, 0.011]	−0.011	0.827	1.000	0.044
	PRC	−0.0036 [−0.023, 0.015]	−0.018	0.707	1.000	
	NRC	0.0065 [−0.011, 0.024]	0.035	0.463	1.000	
Depression	PMLD	−0.0061 [−0.016, 0.004]	−0.060	0.248	1.000	0.012
	PRC	−0.0005 [−0.016, 0.015]	−0.003	0.955	1.000	
	NRC	−0.0002 [−0.015, 0.014]	−0.001	0.983	1.000	
Anxiety	PMLD	0.0065 [−0.003, 0.016]	0.069	0.177	1.000	0.025
	PRC	0.0051 [−0.009, 0.019]	0.033	0.481	1.000	
	NRC	−0.0037 [−0.017, 0.009]	−0.026	0.585	1.000	
Hostility	PMLD	−0.0108 [−0.022, 0.000]	−0.096	0.061	1.000	0.039
	PRC	0.0175 [0.000, 0.035]	0.094	0.044	1.000	
	NRC	0.0004 [−0.015, 0.016]	0.002	0.962	1.000	
Phobic anxiety	PMLD	0.0073 [−0.003, 0.018]	0.070	0.173	1.000	0.020
	PRC	−0.0055 [−0.021, 0.011]	−0.032	0.503	1.000	
	NRC	−0.0073 [−0.022, 0.007]	−0.046	0.330	1.000	
Paranoid ideation	PMLD	0.0033 [−0.007, 0.014]	0.031	0.548	1.000	0.010
	PRC	−0.0088 [−0.025, 0.007]	−0.050	0.287	1.000	
	NRC	0.0046 [−0.010, 0.020]	0.029	0.545	1.000	
Psychoticism	PMLD	−0.0075 [−0.018, 0.003]	−0.073	0.156	1.000	0.028
	PRC	−0.0023 [−0.018, 0.013]	−0.014	0.771	1.000	
	NRC	−0.0138 [−0.028, 0.001]	−0.089	0.061	1.000	

Note: Each secondary model includes age, sex, residence, income, two education indicators, and all three exposures. Bonferroni adjustment: 27 principal exposure coefficients (9 outcomes × 3 exposures). Full covariate coefficients appear in Table A1. For the primary model, the Ramsey RESET (p = 0.403), Breusch–Pagan (p = 0.697), and Jarque–Bera (p = 0.681) tests did not indicate major model-specification, heteroscedasticity, or residual-normality departures, respectively. Predictor variance inflation factors ranged from 1.02 to 2.55. Using Cook's distance > 4/n flagged 23 observations; the HC3 robust-SE model and a sensitivity model excluding these observations (n = 437) yielded the same nonsignificant conclusion for PMLD, PRC, and NRC. Abbreviations: BSI-53: Brief Symptom Inventory-53; CI: Confidence interval; NRC: Negative religious coping; PMLD: Post-migration living difficulties; PRC: Positive religious coping.

Table 13. Adjusted interactions of post-migration living difficulties with positive and negative religious coping on raw Global Severity Index (n = 460)

Interaction	B	SE	95% CI	p	p adj.	R^2	ΔR^2
PMLD × PRC	−0.00011	0.00061	[−0.00131, 0.00109]	0.860	1.000	0.0200	0.0001
PMLD × NRC	−0.00061	0.00047	[−0.00153, 0.00031]	0.190	0.381	0.0237	0.0037

Note: Both models include all three main exposures and adjustment for age, gender, residence, family income, and two education indicators. Predictors were mean-centered before interaction construction. PRC model: $F(10, 449) = 0.92$, $p = 0.518$; NRC model: $F(10, 449) = 1.09$, $p = 0.369$. Bonferroni-adjusted $\alpha = 0.025$ across the two interaction tests.
Abbreviations: CI: Confidence interval; NRC: Negative religious coping; PMLD: Post-migration living difficulties; PRC: Positive religious coping; SE: Standard error.

across trauma-exposed and cross-cultural populations also supports careful attention to the instrument's measurement properties.[25,26] In the present data, the low internal consistency of the 53-item composite further limits confidence in interpreting the GSI as a precise overall index of symptom burden.

Positive religious coping scores were higher than NRC scores (mean item scores: 2.72 and 1.15, respectively), indicating that respondents endorsed PRC practices more frequently. Religious and spiritual practices have been described as culturally meaningful resources in studies involving Syrian adolescents and displaced Arab and Muslim populations.[27-29] However, frequency of use differs from demonstrated associations with contemporaneous psychological symptoms. In the present analysis, neither coping subscale was significantly associated with raw GSI. Previous refugee research has also found that spirituality or religious practice may be prominent without a corresponding reduction in measured distress, while other studies link coping more closely to resilience or meaning-making than to symptom scores.[12,30,31] These comparisons are contextual rather than evidence that religious coping was ineffective in this sample, particularly given the low reliability of the adapted subscales.

A central correction to the interpretation concerns the originally reported inverse associations between PMLD and psychological distress. The inverse PMLD–GSI correlation in the earlier T-score analysis was not reproduced when the verified 16-item PMLD total and raw GSI were used consistently ($r = -0.022$, 95% CI: −0.113 to 0.070, $p = 0.637$). Accordingly, it would be inappropriate to explain the previous negative association as psychological adaptation or to suggest that greater hardship was protective. The present result is better characterized as an imprecisely estimated, near-zero bivariate association in these data. This differs from literature in which post-migration stressors are associated with poorer refugee mental health,[6,19,24,32] but the discrepancy cannot be resolved through speculative explanations, particularly while questions about measurement reliability remain.

In the multivariable model adjusting for age, gender, place of residence, family income, education, PRC, and NRC, the three principal exposures were not statistically significantly associated with raw GSI. The overall model explained approximately 2.0% of GSI variance (R^2 = 0.020), and none of the 27 exposure coefficients across the nine symptom-specific models remained significant following the prespecified Bonferroni correction. These results do not establish the absence of associations in the wider refugee population. Rather, they indicate that the present data did not provide sufficiently precise or reliable evidence of independent associations under the specified models. Measurement error, omitted contextual factors, and the cross-sectional design all constrain interpretation.

The adjusted moderation models similarly yielded no statistically significant PMLD × PRC (p = 0.860) or PMLD × NRC (p = 0.190) interaction. Thus, the data did not demonstrate that the relationship between PMLD and raw GSI varied by either religious coping score. This should not be equated with proof that religious coping has no buffering role: the original sample size calculation was not tailored to detecting small interactions, and low subscale reliability may attenuate estimated interaction effects. Religious coping may also relate to outcomes such as resilience, social connection, spiritual meaning, or well-being that were not measured as primary outcomes here.[28,32-34]

The sociodemographic findings also changed after the scoring audit. Women reported higher PMLD total scores than men, and community residents reported higher

totals than camp residents; however, the low reliability of the total scale warrants caution regarding these contrasts. PRC and NRC did not differ significantly by gender or residence. No gender or residence comparison across the 12 raw BSI-53 outcomes remained significant after multiplicity correction, and the mean raw GSI was nearly identical for men and women. These results do not support the originally reported large male–female GSI difference. Differences between refugee studies in gender-related distress and camp versus community outcomes have been documented, and sampling conditions, instruments, and the specific outcomes assessed should be considered before making comparisons.[21,35-38]

Exploratory ranking of PMLD items suggested that the most frequently endorsed difficulties varied across demographic subgroups, offering a more detailed view than total-score comparisons alone. These rankings were descriptive and were not tested as confirmatory between-group differences. The finding is nonetheless relevant to service planning: refugee youth need not share an identical profile of financial, family, administrative, or social concerns simply because they belong to the same broad demographic category.[22,23]

The study included youth from both camp and host-community settings, included 460 of 510 eligible individuals, and considered PRC and NRC simultaneously in adjusted and interaction models. Nevertheless, purposive recruitment does not establish population representativeness. The cross-sectional design precludes causal or temporal conclusions; self-report measures are susceptible to reporting and recall biases; and participants self-reported previous psychiatric diagnoses, with diagnosed individuals excluded. That criterion, together with Arabic literacy requirements and exclusion of 33 incomplete questionnaires, may have introduced selection bias. Pre-migration trauma, current social support, clinical diagnostic status, and other potentially relevant contextual factors were not comprehensively assessed.

The most consequential limitation is measurement reliability. Full-sample Cronbach's alpha values were 0.038 for PMLD, 0.014 for PRC, 0.063 for NRC, and 0.087 for the BSI-53 composite. These estimates are markedly lower than the reported pilot values and do not support interpreting the corresponding aggregate scores as internally coherent constructs. The adapted instruments also lacked a full-sample assessment of factorial or broader construct validity. Item coding, response anchors, and the agreement between questionnaire forms and the analytical dataset require further verification; until these issues are resolved, both significant and nonsignificant associations should be treated as exploratory and subject to substantial measurement uncertainty.

In summary, individual responses identified financial hardship, limited assistance, concern for relatives, and employment barriers as prominent difficulties among participating Syrian refugee youth, while PRC was more frequently endorsed than NRC. The verified raw-score analyses did not establish independent or moderating associations of PMLD and religious coping with overall self-reported distress. These findings emphasize the importance of assessing practical and psychosocial needs directly rather than presuming that the frequency of a culturally meaningful coping strategy reflects lower symptom severity. Future studies should use rigorously validated Arabic instruments, probability-based or more systematically stratified sampling where feasible, and longitudinal designs that can examine how post-migration experiences, coping, and psychological symptoms change over time.

5. Strengths and limitations

The present study has several strengths. First, it included a relatively large sample of 460 Syrian refugee youth recruited from both formal refugee camps and host communities in Jordan, allowing the examination of psychological distress across different post-migration living environments. The inclusion of participants aged 15–29 years provided insight into a population undergoing important developmental, educational, and socioeconomic transitions. Second, the study simultaneously examined PMLD, PRC, and NRC, providing a culturally relevant perspective on psychological distress following displacement. Third, the application of multivariable regression and moderation analyses, with adjustment for relevant sociodemographic characteristics, enabled a more comprehensive examination of associations than bivariate analyses alone. The use of Arabic-language instruments and standardized data-collection procedures further supported the feasibility of conducting research within this population.

Nevertheless, several limitations should be acknowledged. The cross-sectional design precludes establishing temporal relationships or drawing causal conclusions regarding the associations among post-migration difficulties, religious coping, and psychological distress. The purposive, non-probability sampling strategy, although necessary for recruitment across camp and community settings, may have introduced selection bias and limits the generalizability of the findings to the wider Syrian refugee population in Jordan. Furthermore, recruitment was restricted to Arabic-literate individuals and accessible locations, potentially excluding refugees with limited literacy or different socioeconomic and living

circumstances.

The exclusion of participants with a previously diagnosed mental disorder represents an additional limitation. Previous psychiatric diagnoses were ascertained through participant self-report without verification through medical records or structured clinical interviews. Consequently, recall and reporting biases, as well as the inclusion of individuals with undiagnosed mental disorders, cannot be excluded. This eligibility criterion may also have reduced the representation of individuals with previously recognized mental health conditions. Additionally, 33 incomplete questionnaires were excluded from the analysis, and potential differences between participants with complete and incomplete responses could not be fully evaluated.

Measurement-related limitations warrant particular consideration. Although the PMLD and Brief RCOPE instruments underwent cultural adaptation and preliminary content-validity assessment, their factorial structures and broader construct validity were not independently established in the present sample. Low full-sample internal consistency estimates and discrepancies between pilot and main-sample reliability findings raise concerns regarding measurement precision and the interpretation of associations involving these instruments. The removal of one item from the original PMLD scale may also affect comparability with previous studies. Furthermore, psychological distress was assessed using self-reported BSI-53 scores rather than structured diagnostic interviews. The findings therefore reflect psychological symptom severity and should not be interpreted as establishing psychiatric diagnoses or clinical prevalence.

Although the final sample provided sufficient observations to fit the prespecified multivariable models, the original sample size calculation was not specifically designed to detect small interaction effects. Consequently, the nonsignificant moderation findings should not be interpreted as definitive evidence that religious coping has no moderating role. Examining multiple symptom dimensions also increased the number of statistical comparisons. Although multiplicity adjustments were incorporated, secondary and exploratory findings require cautious interpretation. Finally, potentially relevant factors, including premigration trauma exposure, displacement duration, perceived social support, and access to mental health services, were not included in the analytical models. Residual confounding may therefore remain.

Future longitudinal and multicenter studies using probability-based sampling, further validated Arabic measurement instruments, and comprehensive assessments of migration-related experiences are needed to clarify the temporal and contextual relationships among post-migration difficulties, religious coping, and psychological distress. Particular attention should be given to the psychometric evaluation of the adapted PMLD and Brief RCOPE instruments and to the potential contribution of social support, resilience, and other coping resources.

6. Conclusion

This cross-sectional study examined PMLD, religious coping, and psychological distress among Syrian refugee youth in Jordan. Financial hardship, difficulties obtaining financial assistance, employment challenges, and concerns about family members remaining in Syria were prominent post-migration difficulties. PRC was reported more frequently than NRC, highlighting the cultural relevance of faith-based coping strategies in this population.

Following verification of instrument scoring and multivariable analyses, PMLD, PRC, and NRC were not significantly associated with overall psychological distress, as measured by the raw BSI-53 GSI, after adjustment for relevant sociodemographic characteristics. Neither PRC nor NRC significantly moderated the association between PMLD and psychological distress. These findings should be interpreted cautiously given the study's cross-sectional design, non-probability sampling, and limitations in measurement reliability.

The findings highlight the importance of considering psychological symptoms within the broader socioeconomic, cultural, and displacement-related circumstances of refugee youth. Culturally responsive mental health and psychosocial services should address persistent post-migration challenges while recognizing religious coping as a potentially meaningful personal and cultural resource. Future longitudinal research using further validated instruments is warranted to clarify these relationships and examine additional contextual and resilience-related factors influencing psychological well-being among Syrian refugee youth.

Acknowledgments

None.

Funding

None.

Conflict of interest

The authors declare that they have no competing interests.

Author contributions

Conceptualization: All authors

Data curation: Saleh Fawwaz Khataybeh, Mahadir Ahmad
Formal analysis: Saleh Fawwaz Khataybeh, Mahadir Ahmad
Investigation: Saleh Fawwaz Khataybeh
Methodology: All authors
Supervision: Mahadir Ahmad, Fawwaz Ayoub Momani
Writing–original draft: Saleh Fawwaz Khataybeh
Writing–review & editing: Mahadir Ahmad, Fawwaz Ayoub Momani

Ethics approval and consent to participate

Ethical approval was obtained from the Research Ethics Committee of Universiti Kebangsaan Malaysia (UKM) (Ethics Reference No. JEP-2025-382). Official authorization to conduct the study in Jordan, including data collection within refugee camps, was obtained from the Jordanian Ministry of Interior and relevant authorities. Written informed consent was obtained from all participants aged 18 years or older. For participants aged 15–17 years, written informed consent was obtained from a parent or legal guardian, and written assent was obtained from the participants prior to participation.

Consent for publication

All participants provided informed consent or assent, as applicable, to participate in the study, including the use of their anonymized data for research and scientific publication. No personally identifiable information is included in the manuscript.

Availability of data

The data that support the findings of this study are available from the corresponding author upon reasonable request.

AI tools statement

No artificial intelligence tools were used during the conduct of the study or the preparation of the original manuscript.

References

1. United Nations High Commissioner for Refugees. *External Statistical Report on UNHCR Registered Refugees and Asylum-Seekers Jordan as of 31 December 2025*. Geneva, Switzerland: UNHCR; 2026. Published January 5, 2026. Accessed August 22, 2026. https://data.unhcr.org/en/documents/details/120421

2. Dehnel R, Dalky H, Sudarsan S, Al-Delaimy WK. Resilience and mental health among Syrian refugee children in Jordan. *J Immigr Minor Health*. 2022;24(2):420-429.

   doi: 10.1007/s10903-021-01180-0

3. Momani FA, Odat FA. Secondary stressors among Syrian refugees in Jordan. *Int J Psychol Educ Res*. 2022;1(2):262-290.

   doi: 10.65028/ijoper.v1i2.32

4. Alfadhli K, Drury J. A typology of secondary stressors among refugees of conflict in the Middle East: the case of Syrian refugees in Jordan. *PLoS Curr*. 2018;10.

   doi: 10.1371/currents.dis.4bd3e6437bff47b33ddb9f73cb72f3d8

5. Silove D, Steel Z, McGorry P, Mohan P. Trauma exposure, postmigration stressors, and symptoms of anxiety, depression and post-traumatic stress in Tamil asylum-seekers: comparison with refugees and immigrants. *Acta Psychiatr Scand*. 1998;97(3):175-181.

   doi: 10.1111/j.1600-0447.1998.tb09984.x

6. Nemani A, Kananian S, Starck A, *et al*. Carrying what came after: post-migration difficulties and depression among refugees and asylum seekers. *Confl Health*. 2025;19(1):86.

   doi: 10.1186/s13031-025-00728-3

7. Frounfelker RL, Miconi D, Farrar J, Brooks MA, Rousseau C, Betancourt TS. Mental health of refugee children and youth: epidemiology, interventions, and future directions. *Annu Rev Public Health*. 2020;41(1):159-176.

   doi: 10.1146/annurev-publhealth-040119-094230

8. Lazarus RS, Folkman S. *Stress, Appraisal, and Coping*. New York, NY: Springer Publishing Company; 1984.

9. Pargament KI. *The Psychology of Religion and Coping: Theory, Research, Practice*. New York, NY: Guilford Press; 1997.

10. Pargament KI, Smith BW, Koenig HG, Perez L. Patterns of positive and negative religious coping with major life stressors. *J Sci Study Relig*. 1998;37(4):710-724.

    doi: 10.2307/1388152

11. Pargament KI, Feuille M, Burdzy D. The Brief RCOPE: current psychometric status of a short measure of religious coping. *Religions (Basel)*. 2011;2(1):51-76.

    doi: 10.3390/rel2010051

12. Ramadan M, Kheirallah K, Saleh T, Bellizzi S, Shorman E. The relationship between spirituality and post-traumatic stress symptoms in Syrian adolescents in Jordan. *J Child Adolesc Trauma*. 2022;15(3):585-593.

    doi: 10.1007/s40653-021-00401-w

13. Hobfoll SE. Conservation of resources: a new attempt at conceptualizing stress. *Am Psychol*. 1989;44(3):513-524.

    doi: 10.1037/0003-066X.44.3.513

14. Hobfoll SE. The influence of culture, community, and the nested-self in the stress process: advancing conservation of resources theory. *Appl Psychol*. 2001;50(3):337-421.

    doi: 10.1111/1464-0597.00062

15. Schick M, Morina N, Mistridis P, Schnyder U, Bryant RA, Nickerson A. Changes in post-migration living difficulties predict treatment outcome in traumatized refugees. *Front Psychiatry*. 2018;9:476.

doi: 10.3389/fpsyt.2018.00476

16. Pargament KI, Koenig HG, Perez LM. The many methods of religious coping: development and initial validation of the RCOPE. *J Clin Psychol*. 2000;56(4):519-543.

doi: 10.1002/(SICI)1097-4679(200004)56:4<519::AID-JCLP6>3.0.CO;2-1

17. Daoud FS, Abojedi AA. Equivalent factorial structure of the Brief Symptom Inventory (BSI) in clinical and nonclinical Jordanian populations. *Eur J Psychol Assess*. 2010;26(2):116-121.

doi: 10.1027/1015-5759/a000016

18. Derogatis LR. *Brief Symptom Inventory (BSI): Administration, Scoring, and Procedures Manual*. 4th ed. Minneapolis, MN: National Computer Systems; 1993.

19. Santambrogio J, Cimminiello N, Wisidagamage Don P, *et al*. Influence of post-migration living difficulties on mental health among refugees and asylum seekers: a scoping review on clinical tools. *Int J Soc Psychiatry*. 2024;70(7):1191-1201.

doi: 10.1177/00207640241251748

20. Atrooz F, Acquati C, Bhattacharjee A, Khabour OF, Aljararwah S, Salim S. Post-migration stress and mental health outcomes: a comparative study of Syrian refugee women in Houston and Jordan. *Soc Sci*. 2025;14(2):70.

doi: 10.3390/socsci14020070

21. Atrooz F, Khabour OF, Almomani F, Aljararwah S, Alfurjani BH, Salim S. Education and socioeconomic status as predictors of refugee mental health: insights from a study of Jordan-based Syrian refugee sample. *Front Public Health*. 2024;12:1432205.

doi: 10.3389/fpubh.2024.1432205

22. Assaf SA, Nuwayhid I, Habib RR. A conceptual framework on pre- and post-displacement stressors: the case of Syrian refugees. *Front Public Health*. 2024;12:1372334.

doi: 10.3389/fpubh.2024.1372334

23. Lambert JE, Abutaleb H, Odeh R, de Jong J. "Let it stay in the heart": cultural and gendered experiences of distress among Syrian refugees in Jordan. *Front Psychol*. 2024;15:1456201.

doi: 10.3389/fpsyg.2024.1456201

24. Solberg Ø, Nissen A, Saboonchi F. Post-migration stressors, mental health and well-being in resettled refugees from Syria: do individuals' coping strategies matter? *Confl Health*. 2023;17(1):60.

doi: 10.1186/s13031-023-00556-3

25. Raghavan SS, Rosenfeld B, Rasmussen A. Measurement invariance of the Brief Symptom Inventory in survivors of torture and trauma. *J Interpers Violence*. 2017;32(11):1708-1729.

doi: 10.1177/0886260515619750

26. Quintana GR, Ponce FP, Escudero-Pastén JI, *et al*. Cross-cultural validation and measurement invariance of anxiety and depression symptoms: a study of the Brief Symptom Inventory (BSI) in 42 countries. *J Affect Disord*. 2024;350:991-1006.

doi: 10.1016/j.jad.2024.01.127

27. Al-Shatanawi TN, Khader Y, ALSalamat H, *et al*. Identifying psychosocial problems, needs, and coping mechanisms of adolescent Syrian refugees in Jordan. *Front Psychiatry*. 2023;14:1184098.

doi: 10.3389/fpsyt.2023.1184098

28. Skalisky J, Wanner S, Howe B, Mauseth K. Religious coping, resilience, and involuntary displacement: a mixed-methods analysis of the experience of Syrian and Palestinian refugees in Jordan. *Psycholog Relig Spiritual*. 2022;14(4):539-547.

doi: 10.1037/rel0000390

29. Bridi L, Kaki DA, Albahsahli B, *et al*. The influences of faith on illness representations and coping procedures of mental and cognitive health among aging Arab refugees: a qualitative study. *Front Psychiatry*. 2023;14:1083367.

doi: 10.3389/fpsyt.2023.1083367

30. Rutledge K. Rethinking pathways to well-being: the function of faith practice in distress alleviation among displaced Muslim women affected by war. *Front Psychiatry*. 2025;16:1335640.

doi: 10.3389/fpsyt.2025.1335640

31. Shibli H, Ali E, Rosencrans PL, *et al*. Religion and spirituality as pathways to resilience: the role of positive coping and postmigration stress in displaced populations. *J Trauma Stress*. 2026;39(3):439-452.

doi: 10.1002/jts.70055

32. EL-Awad U, Eves R, Hachenberger J, *et al*. Post-migration stress mediates associations between potentially traumatic peri-migration experiences and mental health among Middle Eastern refugees in Germany. *BMC Public Health*. 2025;25(1):2582.

doi: 10.1186/s12889-025-23660-w

33. Maier K, Konaszewski K, Skalski SB, Büssing A, Surzykiewicz J. Spiritual needs, religious coping and mental wellbeing: a cross-sectional study among migrants and refugees in Germany. *Int J Environ Res Public Health*. 2022;19(6):3415.

doi: 10.3390/ijerph19063415

34. Skalski-Bednarz SB, Konaszewski K, Muszyńska J, Maier K, Surzykiewicz J. Negative situation appraisal and mental well-being among refugees in Germany: serial mediation

by religious coping and sense of coherence. *Int Migr*. 2023;61(4):139-151.

doi: 10.1111/imig.13087

35. Ojha S, Thapa S, Thapa SB. Mental health problems among Syrian refugees in Nordic countries: a systematic review. *Nord J Psychiatry*. 2024;78(7):561-569.

doi: 10.1080/08039488.2024.2403600

36. Kibler JL, Toukhly O. Trauma experiences, posttraumatic stress disorder symptoms, and psychological well-being of Syrian refugees in Jordan and the United States. *Traumatology*. 2024;30(4):619-624.

doi: 10.1037/trm0000479

37. Alduraidi H, Al Karmi F, Mustafa A, *et al*. The impact of war trauma and housing environment on mental wellbeing of Syrian refugees in Jordan: a comparison between in-camp and urban populations. *Issues Ment Health Nurs*. 2024;45(2):186-195.

doi: 10.1080/01612840.2023.2297306

38. Yonis OB, Khader Y, Taha H, *et al*. Psychosocial and emotional well-being of Syrian refugee children and adolescents in Jordan: in-camp versus out-of-camp comparative analysis. *Narra J*. 2024;4(2):e849.

doi: 10.52225/narra.v4i2.849

Appendix

Table A1 reports the complete set of sociodemographic covariate estimates from the nine secondary symptom-specific regression models. Exposure coefficients and multiplicity-adjusted *p*-values are presented in Table 12.

Table A1. Covariate coefficients in adjusted raw Brief Symptom Inventory-53 symptom models

Outcome	Covariate	B [95% CI]	*p*
Somatization	Age	−0.000 [−0.015, 0.014]	0.977
	Female (vs. male)	−0.014 [−0.098, 0.070]	0.740
	Outside camp (vs. inside)	−0.014 [−0.110, 0.082]	0.771
	Monthly income (JOD)	0.00038 [−0.00017, 0.00094]	0.178
	Upper secondary (vs. lower)	0.072 [−0.055, 0.199]	0.265
	Tertiary or higher (vs. lower)	0.122 [−0.027, 0.270]	0.107
Obsession–compulsion	Age	−0.012 [−0.028, 0.004]	0.128
	Female (vs. male)	0.020 [−0.070, 0.110]	0.657
	Outside camp (vs. inside)	−0.101 [−0.204, 0.003]	0.056
	Monthly income (JOD)	−0.00017 [−0.00077, 0.00043]	0.572
	Upper secondary (vs. lower)	0.017 [−0.119, 0.153]	0.806
	Tertiary or higher (vs. lower)	0.141 [−0.019, 0.301]	0.083
Interpersonal sensitivity	Age	0.027 [0.007, 0.047]	0.008
	Female (vs. male)	0.034 [−0.082, 0.149]	0.566
	Outside camp (vs. inside)	0.141 [0.009, 0.274]	0.037
	Monthly income (JOD)	−0.00061 [−0.00138, 0.00016]	0.120
	Upper secondary (vs. lower)	0.017 [−0.158, 0.192]	0.848
	Tertiary or higher (vs. lower)	−0.169 [−0.374, 0.036]	0.106
Depression	Age	−0.006 [−0.022, 0.011]	0.496
	Female (vs. male)	0.049 [−0.047, 0.144]	0.318
	Outside camp (vs. inside)	−0.036 [−0.146, 0.073]	0.515
	Monthly income (JOD)	0.00028 [−0.00036, 0.00092]	0.386
	Upper secondary (vs. lower)	−0.011 [−0.156, 0.134]	0.880
	Tertiary or higher (vs. lower)	0.072 [−0.098, 0.241]	0.407
Anxiety	Age	0.006 [−0.009, 0.021]	0.463
	Female (vs. male)	−0.043 [−0.130, 0.044]	0.327
	Outside camp (vs. inside)	−0.104 [−0.204, −0.004]	0.041
	Monthly income (JOD)	0.00079 [0.00021, 0.00137]	0.007
	Upper secondary (vs. lower)	−0.002 [−0.134, 0.129]	0.971
	Tertiary or higher (vs. lower)	−0.043 [−0.197, 0.111]	0.583
Hostility	Age	0.008 [−0.010, 0.026]	0.377
	Female (vs. male)	0.139 [0.035, 0.243]	0.009
	Outside camp (vs. inside)	−0.073 [−0.192, 0.046]	0.230
	Monthly income (JOD)	0.00061 [−0.00008, 0.00130]	0.083

(*Cont'd...*)

Table A1. (*Continued*)

Outcome	Covariate	B [95% CI]	*p*
Phobic anxiety	Upper secondary (vs. lower)	0.011 [−0.146, 0.168]	0.892
	Tertiary or higher (vs. lower)	0.021 [−0.163, 0.206]	0.820
	Age	−0.018 [−0.035, −0.001]	0.035
	Female (vs. male)	−0.058 [−0.155, 0.040]	0.247
	Outside camp (vs. inside)	0.008 [−0.104, 0.119]	0.894
	Monthly income (JOD)	0.00006 [−0.00059, 0.00071]	0.849
Paranoid ideation	Upper secondary (vs. lower)	0.089 [−0.059, 0.236]	0.239
	Tertiary or higher (vs. lower)	0.089 [−0.084, 0.261]	0.315
	Age	0.003 [−0.014, 0.020]	0.721
	Female (vs. male)	−0.009 [−0.108, 0.090]	0.851
	Outside camp (vs. inside)	0.016 [−0.098, 0.130]	0.784
	Monthly income (JOD)	−0.00003 [−0.00069, 0.00063]	0.932
Psychoticism	Upper secondary (vs. lower)	0.045 [−0.105, 0.195]	0.557
	Tertiary or higher (vs. lower)	0.082 [−0.094, 0.257]	0.362
	Age	−0.004 [−0.020, 0.013]	0.673
	Female (vs. male)	−0.056 [−0.152, 0.039]	0.249
	Outside camp (vs. inside)	0.084 [−0.025, 0.194]	0.132
	Monthly income (JOD)	0.00022 [−0.00042, 0.00086]	0.496
	Upper secondary (vs. lower)	0.091 [−0.054, 0.236]	0.216
	Tertiary or higher (vs. lower)	0.087 [−0.083, 0.257]	0.317

Note: All estimates are mutually adjusted for all covariates and PMLD, PRC, and NRC. Sociodemographic coefficient *p*-values are exploratory and unadjusted. Reference categories: male, inside camp, lower-secondary education.
Abbreviations: CI: Confidence interval; JOD: Jordanian dinar; NRC: Negative religious coping; PMLD: Post-migration living difficulties; PRC: Positive religious coping.

Table A2. Three highest-ranked post-migration living difficulties items in selected demographic subgroups

Group	Highest (mean)	Second (mean)	Third (mean)
Male (*n* = 251)	PM11 (2.77)	PM9 (2.65)	PM6 (2.59)
Female (*n* = 209)	PM2 (3.61)	PM6 (2.72)	PM9 (2.68)
Inside camp (*n* = 196)	PM11 (2.81)	PM9 (2.63)	PM6 (2.62)
Outside camp (*n* = 264)	PM3 (3.22)	PM2 (2.73)	PM9 (2.69)
Lower secondary (*n* = 99)	PM9 (2.78)	PM11 (2.77)	PM6 (2.67)
Upper secondary (*n* = 242)	PM11 (2.71)	PM2 (2.69)	PM9 (2.64)
Tertiary or higher (*n* = 119)	PM4 (2.98)	PM1 (2.89)	PM6 (2.76)

Note: Exploratory within-group ordering, not hypothesis-tested group comparisons. Item descriptions are provided in Table 2.