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From perceived need to help-seeking among Mongolian adolescents: gaps in the mental health support pathway in a school-based cross-sectional study across Mongolia

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Abstract

Background

Adolescents may recognize a need for mental health support without seeking it. Evidence on this transition is scarce in lower-resource settings. We examined perceived need, help-seeking, sources of support, and factors associated with different reported help-seeking categories among school-attending adolescents in Mongolia.

Methods

We analyzed cross-sectional data from 2843 school-attending adolescents aged 11–17 years in 101 schools across Mongolia who participated in the 2023 Global Child and Adolescent Mental Health Study. A single six-month item classified adolescents as reporting no perceived need, having considered outside help, or having sought outside help. Logistic regression examined correlates of perceived need and, among those with perceived need, of actual help-seeking. Because school identifiers and survey weights were unavailable, estimates are unweighted and not adjusted for school clustering; robustness was assessed with heteroskedasticity-consistent standard errors, functional-impact adjustment, and an approximate design-effect sensitivity analysis.

Results

Overall, 1372 adolescents (48.3%) reported no perceived need, 1051 (37.0%) considered help without seeking it, and 420 (14.8%) sought outside help. Among 1471 adolescents with perceived need, 28.6% sought help. Female sex (adjusted odds ratio [aOR] 1.58, 95% confidence interval [CI] 1.34–1.86), suicidal ideation only (aOR 1.77, 95% CI 1.43–2.20), self-harm plus ideation (aOR 3.31, 95% CI 2.42–4.53), suicide attempt (aOR 2.65, 95% CI 1.99–3.55), and greater internalising symptoms (per 1 SD: aOR 1.23, 95% CI 1.11–1.36) were associated with perceived need. Among adolescents with perceived need, greater internalising symptoms were associated with lower help-seeking (aOR 0.62, 95% CI 0.54–0.73), robustly across sensitivity analyses. Lower help-seeking with ultra-rural residence (aOR 0.56, 95% CI 0.33–0.93) and suicidal ideation only (aOR 0.70, 95% CI 0.51–0.98) was not robust. Of 314 help-seekers with source data, 75.8% reported friends, 40.8% relatives, and 14.6% any professional source.

Conclusions

The principal systems gap was the conversion of recognized need into action. Higher internalising burden was associated with greater recognition of need yet lower help-seeking once need was recognized. These findings support evaluating low-threshold school pathways that do not rely on self-

referral, strengthen trusted informal gatekeepers, and link them to formal care. Geographic differences require confirmation with design-adjusted data.

Background

Adolescent mental health problems are common, yet need does not automatically lead to care. Reviews of youth help-seeking identify a multistep pathway that includes recognizing a problem, considering help, deciding to seek help, and reaching a source that can respond [1–5]. Across these steps, stigma, limited mental health literacy, concerns about confidentiality, self-reliance, service availability, cost, and logistical barriers can interrupt access [2, 3]. A global meta-analysis estimated that more than half of adolescents with mental health care needs have unmet need, although definitions vary substantially across studies [6]. This discontinuity is consistent with the broader mental-health treatment gap described internationally [7]. Mental health literacy is also heterogeneous among children and adolescents in low- and middle-income countries and can shape recognition of problems and knowledge of routes to care [8]. For mental health systems, expanding specialist capacity alone may have limited reach if adolescents who recognize a need do not enter a support pathway.

Recent cross-national research using the same family of help-seeking items as the present study showed large differences in adolescent help-seeking across Asian and European settings and emphasized the importance of both informal and formal sources [1]. Informal sources such as relatives, peers, and teachers can be first points of contact and may facilitate or delay connection to professional care [9]. Schools are therefore strategically important because they can host low-threshold supports, mental health literacy activities, gatekeeper functions, and referral links to community or specialist services [10]. Evidence from Indonesian adolescents further suggests that school climate, perceived stigma, and mental health literacy are interrelated with help-seeking behavior, although such mechanisms were not measured in the present study [11].

Mongolia provides an important setting in which to examine these pathways. Previous school-based studies have documented substantial suicidal thoughts and behaviors among Mongolian adolescents [12–14]. In a 2013 national school survey, Davaasambuu and colleagues reported higher suicidal plans and behaviors in urban than rural adolescents, while many individual risk correlates were similar across settings [13]. These studies did not examine the transition from perceived need to actual help-seeking. At the same time, specialist capacity has historically been concentrated in Ulaanbaatar; a recent report describing the development of Mongolia's first formal child and adolescent psychiatry training program noted major workforce and geographic constraints [15]. These features make the transition from perceived need to actual help-seeking a mental health systems question, not only an individual behavioral outcome.

The present study used a geographically broad school-based sample from the Mongolia component of the Global Child and Adolescent Mental Health Study (GCAMHS). We aimed to: (1) describe the distribution of no perceived need, consideration of help, and actual help-seeking; (2) examine the help-

seeking cascade across mutually exclusive self-harm and suicidality phenotypes; (3) identify sociodemographic and psychopathological correlates of perceived need; (4) identify factors associated with actual help-seeking among adolescents who perceived a need; and (5) describe the sources used by adolescents who reported seeking help. We use recognition-to-action gap as a descriptive term for the difference between perceiving a need and acting on that need; because the outcome includes informal support, we do not equate it with receipt of clinical treatment. A distinct companion manuscript from the same GCAMHS Mongolia cohort examines the prevalence and correlates of self-harm and suicidality; the present paper is analytically distinct and uses suicidality phenotypes to characterize help-seeking stages rather than to estimate their population burden.

Methods

Study design, setting, and participants

This cross-sectional analysis used data collected in Mongolia from March to October 2023 as part of GCAMHS. The sampling frame covered 20 provinces (aimags) and seven administrative districts of Ulaanbaatar. A multistage stratified cluster design was used: 101 schools (94 public and seven private) were selected across geographic strata, classrooms were sampled within schools, and students present in selected classrooms on the survey day were invited to complete an anonymous electronic questionnaire.

Of 2936 electronic responses reportedly received, study flow records document the removal of 42 incomplete or logically invalid records, leaving 2894. The available de-identified analytic extract contains 2852 records, a difference of 42 records for which individual exclusion flags or reasons were not retained. Consequently, the additional exclusions cannot be independently verified from the provided extract. Among the 2852 records, nine respondents selected the 'other' sex/gender category. These nine were included in descriptive results across all 2852 records but excluded from the boy–girl comparative analytic sample (N = 2843), because the regression model used binary sex coding and the subgroup was too small for stable separate estimation. The 2843-person sample is used throughout the primary tables and models; exclusion from comparative models should not be interpreted as a lack of relevance of gender-diverse adolescents.

Help-seeking and perceived need

Help-seeking during the previous six months was assessed with the item: 'Within the past six months, have you at any point felt a need for outside help (someone outside your immediate family) with your problems, feelings, behaviour or emotional trouble?' Response options were: (1) 'No, I have not felt the need', (2) 'I have considered getting outside help', and (3) 'I have sought outside help'. This wording and response structure are consistent with the cross-national GCAMHS and Eurasian Child Mental Health Study (EACMHS) approach [1]. We defined perceived need as responses 2 or 3 and reported help-

seeking among those with perceived need as response 3 versus response 2. The three options were recorded in one retrospective question; they are mutually exclusive response categories, not longitudinally observed transitions. Reported perceived need does not indicate clinician-assessed treatment need, and seeking outside help does not establish access to professional mental health care.

The follow-up item asked adolescents who had sought help where or from whom they obtained it; multiple sources could be selected. Sources included friends, relatives, teachers, psychologists or school counsellors, coaches/sport/leisure leaders, school nurses or medical doctors, and religious/spiritual leaders. Because non-empty source responses were also present among adolescents who selected other response options on the help-seeking item, the source analysis was conservatively restricted to adolescents who both selected 'I have sought outside help' and had a non-empty source response (n = 314 of 420 help-seekers). We defined any professional source as a psychologist/school counsellor and/or school nurse/medical doctor.

Self-harm and suicidality

Three self-report items assessed intentional self-harm (for example, cutting or burning the skin), serious suicidal ideation, and suicide attempt. The available analytic item wording did not specify a recent recall period and did not establish absence of suicidal intent for the self-harm item; accordingly, we use the term self-harm rather than non-suicidal self-injury and do not assign a 12-month timeframe. Responses distinguished no endorsement, one occurrence, and more than one occurrence and were dichotomized as any versus none. A mutually exclusive five-category phenotype was derived: no suicidality; self-harm only; suicidal ideation only; self-harm plus suicidal ideation without attempt; and suicide attempt (regardless of concurrent self-harm or ideation).

Psychopathology and sociodemographic variables

Emotional and behavioral difficulties were measured with the 25-item Strengths and Difficulties Questionnaire (SDQ) [16]. Following established higher-order scoring, internalising symptoms combined emotional and peer-problem subscales and externalising symptoms combined conduct and hyperactivity/inattention subscales (each range 0–20) [17]. The total difficulties score summed the four problem subscales. The SDQ has been evaluated in Mongolian school-age populations, although the published Mongolian validation used the parent-report form rather than the adolescent self-report form used here [18]. Internalising and externalising scores were standardized to z scores for regression models. The suicidality items were separate questionnaire items and were not components of the SDQ scores.

Sociodemographic variables included sex (boy/girl), age in years, geographic context (urban, rural, ultra-rural), family structure (two biological parents, one biological parent, other arrangements), and perceived

family wealth. Perceived wealth was derived from a five-level item and grouped as less than normal (not well/not particularly well), normal (fairly well), or more than normal (rather well/very well).

Statistical analysis

Frequencies and percentages summarized categorical variables; means and standard deviations summarized continuous variables. The overall help-seeking cascade and phenotype-specific cascade were calculated directly from observed counts. Mean SDQ scores were compared across the three help-seeking categories using one-way analysis of variance; Kruskal-Wallis tests were used as a distribution-robust check and led to the same significance conclusions. Table 1 is descriptive and does not present between-group hypothesis tests.

Table 1
Participant characteristics by help-seeking category

Characteristic	No perceived need (n = 1372)	Considered help (n = 1051)	Sought help (n = 420)
Sex			
Female	768 (56.0%)	748 (71.2%)	290 (69.0%)
Male	604 (44.0%)	303 (28.8%)	130 (31.0%)
Age, years, mean (SD)	13.98 (1.58)	13.96 (1.62)	13.88 (1.57)
Geographic context			
Urban	407 (29.7%)	294 (28.0%)	117 (27.9%)
Rural	823 (60.0%)	603 (57.4%)	256 (61.0%)
Ultra-rural	142 (10.3%)	154 (14.7%)	47 (11.2%)
Family structure			
Two biological parents	989 (72.1%)	676 (64.3%)	274 (65.2%)
One biological parent	165 (12.0%)	139 (13.2%)	57 (13.6%)
Other arrangement	218 (15.9%)	236 (22.5%)	89 (21.2%)
Perceived family wealth			
Less than normal	432 (31.5%)	411 (39.1%)	140 (33.3%)
Normal	479 (34.9%)	353 (33.6%)	151 (36.0%)
More than normal	461 (33.6%)	287 (27.3%)	129 (30.7%)
SDQ scores, mean (SD)			
Internalising	6.38 (3.45)	8.36 (3.69)	6.51 (3.55)
Externalising	6.26 (2.91)	7.00 (2.71)	6.30 (2.80)
Total difficulties	12.64 (5.41)	15.36 (5.38)	12.80 (5.51)
Suicidality phenotype			
No suicidality	939 (68.4%)	433 (41.2%)	244 (58.1%)
Self-harm only	70 (5.1%)	55 (5.2%)	17 (4.0%)
Suicidal ideation only	208 (15.2%)	241 (22.9%)	72 (17.1%)

Note. Values are n (%) unless otherwise indicated. SDQ, Strengths and Difficulties Questionnaire. This table is descriptive; no between-group hypothesis tests are presented.

Characteristic	No perceived need (n = 1372)	Considered help (n = 1051)	Sought help (n = 420)
Sex			
Self-harm + ideation	67 (4.9%)	150 (14.3%)	46 (11.0%)
Suicide attempt	88 (6.4%)	172 (16.4%)	41 (9.8%)

Note. Values are n (%) unless otherwise indicated. SDQ, Strengths and Difficulties Questionnaire. This table is descriptive; no between-group hypothesis tests are presented.

We fit two multivariable binary logistic regression models. Model 1 examined perceived need (considered help or sought help vs no perceived need) in the full analytic sample. Model 2 was restricted to adolescents with perceived need and examined actual help-seeking (sought help vs considered help without seeking). Both models included sex, continuous age, geographic context, family structure, perceived family wealth, suicidality phenotype, and standardized internalising and externalising scores. Urban residence, two biological parents, less-than-normal perceived wealth, male sex, and no suicidality were reference categories. Adjusted odds ratios (aORs), 95% confidence intervals (CIs), and two-sided p values are reported. Huber-White HC1 robust standard errors were used to reduce sensitivity to heteroskedasticity. Variance inflation factors (VIFs) were calculated to assess multicollinearity among model predictors.

The analytic dataset did not include school identifiers, strata, or sampling weights, so school-level intracluster correlation and design-weighted inference could not be estimated. HC1 robust standard errors do not account for clustering within schools. We therefore present unweighted individual-level associations and do not report design-based national estimates. To quantify the sensitivity of inferential precision to unmodelled clustering, we conducted an approximate design-effect analysis that inflated HC1 coefficient standard errors by $\sqrt{(1+(m-1)\rho)}$, where m is the model-specific mean number of participants per school (101 schools) and ρ is an assumed intracluster correlation coefficient (ICC) of 0.01, 0.05, or 0.10. This heuristic shows how confidence intervals and p values might widen under plausible clustering; it is not a substitute for cluster-robust or survey-weighted reanalysis and assumes equal average cluster size.

A separate sensitivity analysis added the SDQ functional-impact score to both models. Because impact data were incomplete, the sensitivity samples included 2562 adolescents for the perceived-need model and 1368 adolescents with perceived need for the help-seeking model. Characteristics of adolescents who did and did not complete the source-of-help item were compared using Welch t tests and chi-square tests. We did not impute missing source responses because the source item was a multiple-response item and completion was associated with observed participant characteristics; source percentages therefore describe completers only. To characterize the limits that missing data place on identification, we calculated extreme-case bounds for professional-source reporting among all help-seekers by classifying all 106 missing source responses first as no professional contact and then as professional

contact. These are identification bounds, not confidence intervals. Analyses were conducted in Python using the pandas, statsmodels, and SciPy libraries. Statistical significance was defined as two-sided $p < 0.05$. Reporting follows the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guideline for cross-sectional studies [19].

Use of generative artificial intelligence

Generative artificial intelligence tools (ChatGPT, OpenAI) were used during manuscript preparation to assist with language editing, consistency checking, and the development and refinement of Python code for statistical analyses. These tools were not used to generate or modify primary study data or independently determine study outcomes or scientific conclusions. All statistical procedures, analysis code, and outputs were reviewed and verified by the authors, and the numerical findings were reproduced from the original dataset using scripted analyses. The authors critically reviewed and approved all AI-assisted content and take full responsibility for the accuracy, integrity, interpretation, and conclusions of the manuscript.

Ethical considerations

The study protocol was approved by the Research Ethics Review Committee of the Mongolian National University of Medical Sciences on 20 January 2023 (Meeting/Approval No. 2023/3 – 01). Administrative permission was obtained from education authorities and participating schools. Written informed consent was obtained from parents or legal guardians and written assent from participating adolescents before survey administration. Participation was voluntary and data were collected anonymously using secure digital tablets.

Results

Participant characteristics and the help-seeking pathway

The primary analytic sample comprised 2843 adolescents aged 11–17 years who were coded as boys or girls; 1806 (63.5%) were girls and 1037 (36.5%) were boys. Across all 2852 records, including the nine respondents in the 'other' sex/gender category, 1375 (48.2%) reported no perceived need, 1056 (37.0%) considered help without seeking it, and 421 (14.8%) sought help. In the primary analytic sample (N = 2843), 1372 adolescents (48.3%) reported no perceived need, 1051 (37.0%) had considered outside help but did not report seeking it, and 420 (14.8%) reported seeking outside help (Table 1). Thus, 1471 adolescents (51.7%) reported perceived need, but only 28.6% of those with perceived need sought help. These are unweighted descriptive proportions and should not be interpreted as design-based national prevalence estimates.

Help-seeking cascade across suicidality phenotypes

Perceived need increased across most suicidality phenotypes, from 41.9% among adolescents with no suicidality to 74.5% among those reporting self-harm plus ideation and 70.8% among those reporting suicide attempt (Table 2; Fig. 1). However, the proportion seeking help among those with perceived need was 36.0% in the no-suicidality group and ranged from 19.2% to 23.6% across the four suicidality phenotypes. The lowest observed transition to help-seeking was among adolescents reporting suicide attempt (19.2%). Figure 1 displays the unweighted three-stage pathway overall and by phenotype.

Table 2
Help-seeking cascade by suicidality phenotype

Phenotype	N	No perceived need, n (%)	Considered help, n (%)	Sought help, n (%)	Sought among perceived need, %
No suicidality	1616	939 (58.1%)	433 (26.8%)	244 (15.1%)	36.0%
Self-harm only	142	70 (49.3%)	55 (38.7%)	17 (12.0%)	23.6%
Suicidal ideation only	521	208 (39.9%)	241 (46.3%)	72 (13.8%)	23.0%
Self-harm + suicidal ideation	263	67 (25.5%)	150 (57.0%)	46 (17.5%)	23.5%
Suicide attempt	301	88 (29.2%)	172 (57.1%)	41 (13.6%)	19.2%

Note. Perceived need combines the help-seeking item responses “I have considered getting outside help” and “I have sought outside help”. Percentages in the three response columns are calculated within phenotype rows.

Psychopathology across pathway stages

Adolescents who considered help but did not seek it had the highest mean internalising score (8.36, SD 3.69), externalising score (7.00, SD 2.71), and total SDQ difficulties score (15.36, SD 5.38). Corresponding scores were 6.38 (SD 3.45), 6.26 (SD 2.91), and 12.64 (SD 5.41) among adolescents reporting no need, and 6.51 (SD 3.55), 6.30 (SD 2.80), and 12.80 (SD 5.51) among those who sought help. Overall between-group differences were statistically significant for internalising, externalising, and total difficulties scores (all ANOVA $p < 0.001$; Kruskal-Wallis $p < 0.001$).

Correlates of perceived need

In the fully adjusted perceived-need model (N = 2843; Table 3), girls had higher odds than boys (aOR 1.58, 95% CI 1.34–1.86). Compared with adolescents reporting no suicidality, odds of perceived need were higher for suicidal ideation only (aOR 1.77, 95% CI 1.43–2.20), self-harm plus ideation (aOR 3.31, 95% CI 2.42–4.53), and suicide attempt (aOR 2.65, 95% CI 1.99–3.55). Each 1-SD increase in internalising symptoms was associated with greater odds of perceived need (aOR 1.23, 95% CI 1.11–1.36), whereas externalising symptoms were not independently associated (aOR 0.99, 95% CI 0.90–1.08). Adolescents in other family arrangements also had greater odds than those living with two

biological parents (aOR 1.55, 95% CI 1.15–2.10). Age showed a modest inverse association (per year: aOR 0.93, 95% CI 0.89–0.98).

Table 3
Correlates of perceived need in the full sample

Predictor	aOR	95% CI	p value
Female vs male	1.58	1.34–1.86	< 0.001
Age, per year	0.93	0.89–0.98	0.005
Rural vs urban	1.14	0.95–1.36	0.171
Ultra-rural vs urban	1.01	0.70–1.48	0.945
One biological parent vs two	1.24	0.98–1.57	0.068
Other family structure vs two	1.55	1.15–2.10	0.005
Normal wealth vs less than normal	0.95	0.79–1.15	0.597
More than normal wealth vs less than normal	0.82	0.67-1.00	0.052
Self-harm only vs no suicidality	1.35	0.95–1.91	0.095
Suicidal ideation only vs no suicidality	1.77	1.43–2.20	< 0.001
Self-harm + ideation vs no suicidality	3.31	2.42–4.53	< 0.001
Suicide attempt vs no suicidality	2.65	1.99–3.55	< 0.001
Internalising symptoms, per 1 SD	1.23	1.11–1.36	< 0.001
Externalising symptoms, per 1 SD	0.99	0.90–1.08	0.773

Note. aOR, adjusted odds ratio; CI, confidence interval. Model N = 2843. All listed covariates were entered simultaneously. Internalising and externalising scores are per 1-SD increase. Reference categories are specified in predictor labels. HC1 heteroskedasticity-consistent standard errors were used; estimates are neither survey-weighted nor adjusted for school-level clustering because design variables were unavailable in the analytic dataset.

Correlates of actual help-seeking among adolescents with perceived need

Among the 1471 adolescents with perceived need (Table 4), higher internalising symptoms were associated with substantially lower odds of actual help-seeking (per 1-SD increase: aOR 0.62, 95% CI 0.54–0.73). Ultra-rural residence was also associated with lower odds compared with urban residence (aOR 0.56, 95% CI 0.33–0.93), as was the suicidal-ideation-only phenotype compared with no suicidality (aOR 0.70, 95% CI 0.51–0.98). The adjusted estimate for suicide attempt suggested lower help-seeking but was not statistically significant (aOR 0.69, 95% CI 0.45–1.05; p = 0.082). Sex, age, family structure, perceived wealth, and externalising symptoms were not independently associated with actual help-seeking in this model.

Table 4
Correlates of help-seeking among adolescents with perceived need

Predictor	aOR	95% CI	p value
Female vs male	1.12	0.86–1.46	0.404
Age, per year	1.04	0.96–1.11	0.358
Rural vs urban	0.99	0.75–1.32	0.970
Ultra-rural vs urban	0.56	0.33–0.93	0.026
One biological parent vs two	1.12	0.79–1.61	0.520
Other family structure vs two	1.41	0.94–2.11	0.100
Normal wealth vs less than normal	1.12	0.84–1.49	0.444
More than normal wealth vs less than normal	1.10	0.81–1.48	0.550
Self-harm only vs no suicidality	0.65	0.38–1.13	0.129
Suicidal ideation only vs no suicidality	0.70	0.51–0.98	0.037
Self-harm + ideation vs no suicidality	0.82	0.56–1.21	0.319
Suicide attempt vs no suicidality	0.69	0.45–1.05	0.082
Internalising symptoms, per 1 SD	0.62	0.54–0.73	< 0.001
Externalising symptoms, per 1 SD	0.99	0.86–1.14	0.925

Note. aOR, adjusted odds ratio; CI, confidence interval. Model n = 1471. Outcome: sought outside help vs considered outside help without seeking. All listed covariates were entered simultaneously. HC1 heteroskedasticity-consistent standard errors were used; estimates are neither survey-weighted nor adjusted for school-level clustering.

Sources of help

Of the 420 adolescents who reported seeking outside help, 314 (74.8%) provided a non-empty source response; multiple sources were permitted (Additional file 1, Table S1). Friends were reported by 238 (75.8%), relatives by 128 (40.8%), teachers by 85 (27.1%), psychologists or school counsellors by 35 (11.1%), coaches/sport/leisure leaders by 18 (5.7%), school nurses or medical doctors by 14 (4.5%), and religious/spiritual leaders by 5 (1.6%). Any professional source (psychologist/counsellor and/or school nurse/medical doctor) was reported by 46 of 314 source respondents (14.6%). Source responders differed from nonresponders in age, geographic context, family structure, and SDQ scores (Additional file 1, Table S2). The direction of any resulting bias is uncertain: professional sources could be overrepresented if adolescents using only informal sources were less likely to complete the source item, or underrepresented if adolescents using professional sources were less likely to disclose them. Source percentages therefore describe the completer subgroup and should not be generalized to all 420 help-seekers. For any professional source, 46/420 (11.0%) is the lower extreme-case bound and (46 +

106)/420 (36.2%) is the upper bound; neither bound makes assumptions about which adolescents with missing data used professional care (Additional file 1, Table S3).

Sensitivity analyses

Adding functional impact did not change the central internalising-symptom pattern (Additional file 1, Tables S4 and S5). Internalising symptoms remained positively associated with perceived need (aOR 1.14, 95% CI 1.02–1.27), while functional impact was also associated with greater perceived need (per point: aOR 1.09, 95% CI 1.02–1.15). Among adolescents with perceived need, internalising symptoms remained associated with lower help-seeking (aOR 0.64, 95% CI 0.54–0.75), whereas functional impact was not independently associated with help-seeking (aOR 0.98, 95% CI 0.90–1.06). The primary-model associations for ultra-rural residence and suicidal ideation only attenuated in the reduced sensitivity sample (ultra-rural vs urban: aOR 0.63, 95% CI 0.37–1.08; ideation only vs no suicidality: aOR 0.75, 95% CI 0.53–1.05). Because impact-score availability reduced the samples from 2843 to 2562 and from 1471 to 1368, changes in estimates may reflect both covariate adjustment and selection into the complete-impact subsample.

VIFs provided no evidence of problematic multicollinearity: the maximum VIF was 2.49 in Model 1 and 2.46 in Model 2 (Additional file 1, Table S6). In the approximate ICC precision sensitivity (Additional file 1, Table S7), the main internalising association remained statistically distinguishable from the null under assumed ICCs from 0.01 to 0.10 in both models. The female, ideation-only, self-harm-plus-ideation, and attempt associations with perceived need also remained below $p = 0.05$ at ICC = 0.10, whereas age and other family structure did not. In the help-seeking model, the ultra-rural estimate remained below $p = 0.05$ only at ICC = 0.01, and the ideation-only estimate was no longer below $p = 0.05$ even at ICC = 0.01. These heuristic results reinforce the robustness of the symptom-action finding while underscoring uncertainty around the secondary geographic and phenotype-specific help-seeking estimates.

Discussion

Principal findings

This geographically broad school-based analysis identifies a clear discontinuity in the adolescent mental health support pathway in Mongolia. Just over half of adolescents reported perceived need, but fewer than three in ten of those who recognized a need reported seeking outside help. The characteristics associated with recognition did not necessarily correspond to greater help-seeking. Suicidality and internalising symptoms were associated with perceived need, while among adolescents who already recognized a need, greater internalising burden was associated with lower odds of help-seeking. The internalising pattern was retained across functional-impact and approximate ICC precision sensitivity analyses. By contrast, the ultra-rural and ideation-only help-seeking estimates were less robust and should be treated as secondary signals requiring design-adjusted confirmation. Source data indicated predominant use of friends, relatives, and teachers, but estimates of professional-source use apply only to source-item completers.

Recognition is not sufficient for access

The findings support conceptual models in which help-seeking is a sequence rather than a single behavior [4, 5]. They also align with systematic reviews showing that adolescents can recognize distress while still facing stigma, self-reliance, confidentiality concerns, limited knowledge, logistical barriers, or poor service availability [2, 3, 20]. Mental health literacy may influence both recognition of problems and knowledge of appropriate routes to care [8, 21]. The cross-national study by Mori and colleagues similarly emphasized wide differences in formal help across health systems and the central role of informal support, especially where specialist resources are constrained [1]. The present Mongolia-specific findings extend that work by separating recognition from action and identifying factors associated with each stage.

The consideration stage as an intervention target

The 1051 adolescents who considered outside help but did not seek it represented 37.0% of the entire analytic sample and 71.4% of adolescents with perceived need. This group also had the highest mean internalising, externalising, and total SDQ difficulties scores. The study did not directly measure reasons for remaining at the consideration stage, so stigma, confidentiality concerns, self-reliance, perceived effectiveness, cost, travel, and service availability cannot be assigned as explanations. Nevertheless, the size and symptom burden of this group identify the consideration-to-action transition as a specific systems target for future intervention research. Useful system outcomes would include time from recognized need to first contact, referral completion, perceived confidentiality, and whether adolescents can access support without navigating specialist services on their own.

A symptom-action disconnect with system implications

The most policy-relevant result was the opposite direction of the internalising association across the two modeled stages. Greater internalising symptoms were associated with higher odds of perceiving a need but lower odds of seeking help among adolescents who had perceived a need. This pattern cautions against mental health systems that depend mainly on adolescent self-referral. Withdrawal, hopelessness, anxiety, embarrassment, fear of social evaluation, and reduced self-efficacy are plausible mechanisms discussed in the broader help-seeking literature [2–4], but they were not directly measured here and should not be inferred as causal explanations. Alternatively, adolescents who had already obtained support may have had lower symptom levels at the time of this cross-sectional survey. Because Model 2 conditions on perceived need, a stage that is itself associated with symptom burden and other covariates, unmeasured determinants shared by need recognition and help-seeking could also produce selection bias. The estimate is therefore a stage-specific association, not the causal effect of internalising symptoms on help-seeking. From a systems perspective, the result supports testing proactive, low-threshold routes that reduce the effort required to move from recognized need to contact with support.

Suicidality and priority for proactive outreach

The descriptive cascade was particularly concerning for adolescents reporting suicide attempt: 70.8% perceived a need, yet only 19.2% of those with need reported seeking help. After multivariable adjustment, the attempt phenotype did not independently predict lower help-seeking at the conventional significance threshold. Suicidal ideation only was inversely associated with help-seeking in the primary model, but this estimate attenuated in both functional-impact and approximate clustering sensitivity analyses. The phenotype-specific findings should therefore be interpreted primarily as descriptive and stage-specific service signals rather than causal effects. Earlier research using the Mongolian Global School-based Student Health Survey (GSHS) documented substantial suicidal plans and attempts and geographic differences in suicidal behavior [13], but it did not assess this need-to-action pathway. Systems designed for high-risk adolescents should test safe identification, trusted adult engagement, clear escalation pathways, and rapid linkage to appropriate clinical care rather than waiting for spontaneous help-seeking.

Informal networks as part of the mental health system

Friends, relatives, and teachers dominated reported sources of help. Informal support should not be treated as equivalent to evidence-based clinical care, but it is an important access point in youth pathways [9]. Schools are particularly relevant because they can provide universal contact, low-threshold entry points, mental health literacy activities, and connections to health services [10, 11]. Gatekeeper-training research suggests that training can improve knowledge, attitudes, and self-efficacy, although evidence that these gains consistently translate into referral behavior or population-level outcomes remains limited [22]. In Mongolia, expanding child and adolescent psychiatry training capacity [15] creates an opportunity to evaluate referral networks in which peers, families, teachers, school health staff, and specialist services have clearly defined roles. Such systems should include safeguards so that informal gatekeepers facilitate rather than replace professional assessment when clinical risk is high.

The source-of-help item was incomplete for 106 of 420 help-seekers (25.2%), and source responders differed from nonresponders by age, geographic context, family structure, and symptom scores. The direction of bias is uncertain. If adolescents using only informal sources were less likely to complete the source item, professional sources may be overrepresented among responders; if adolescents using professional sources were less willing to disclose them, professional sources may be underrepresented. The 14.6% professional-source figure should therefore be interpreted as a descriptive estimate among completers rather than an unbiased estimate for all help-seekers. Extreme-case bounds of 11.0%–36.2% among all help-seekers illustrate that missingness can materially alter the estimated professional-source proportion; the endpoints should not be mistaken for a probability interval.

Geographic equity

In the primary model, ultra-rural adolescents with perceived need had approximately 44% lower adjusted odds of help-seeking than urban adolescents. The estimate was not robust to functional-impact adjustment or to moderate assumed school-level ICC in the approximate precision sensitivity analysis. Earlier Mongolian research found higher suicidal plans and behaviors among urban than rural

adolescents [13], but that outcome is different from help-seeking and does not establish a service-access mechanism. The present study did not measure travel distance, local service supply, boarding-school status, cost, connectivity, or digital access. The ultra-rural finding should therefore be treated as a hypothesis-generating systems signal. Future work should recover design variables, link adolescent data to local service availability, and prospectively evaluate whether school-health referral protocols, rural consultation links, or digital/hybrid approaches improve completed access rather than assuming that any specific delivery model will solve geographic barriers [15].

Implications for mental health systems and policy

The results suggest four practical system priorities for evaluation. First, service planning should distinguish recognition from action and monitor both stages rather than using awareness alone as a success indicator. Second, school pathways should test confidential and low-threshold routes to support that do not rely exclusively on self-referral, particularly for adolescents with high internalising burden or suicidality [10, 11]. Third, teachers, peers, and families may be incorporated as supported gatekeepers with explicit boundaries, supervision, and referral protocols, but their impact on completed referral and clinical outcomes should be evaluated rather than assumed [22]. Fourth, geographic equity should be measured with service-supply, referral-completion, travel, and access indicators rather than inferred from residence alone. The relevant systems outcome is not simply whether services exist, but whether adolescents can move from recognized need to appropriate and timely support.

Strengths and limitations

Strengths include a large geographically broad school-based sample, a help-seeking measure with a defined six-month window, analysis of distinct stages of the pathway, and integration of symptom severity, suicidality, family, socioeconomic, and geographic variables. The separation of perceived need from actual help-seeking avoids treating all non-use as a single phenomenon. Functional-impact sensitivity analyses, explicit source-item nonresponse analysis, VIF diagnostics, and approximate ICC-based precision sensitivity analyses were used to test important aspects of robustness and model specification.

Several limitations are important. First, the cross-sectional design prevents temporal or causal inference; lower symptom scores among help-seekers could reflect pre-existing differences, effects of prior support, or other unmeasured factors. Second, perceived need and help-seeking were captured by a single self-report item and did not measure adequacy, quality, duration, barriers, or outcomes of support; perceived need should not be interpreted as clinician-assessed treatment need. Third, the source-of-help item was incomplete for 25.2% of help-seekers and completion was associated with several observed characteristics, so source percentages may be selected. Fourth, the adolescent self-report SDQ used here has not, to our knowledge, undergone the same formal Mongolian validation as the published parent-report version [18]; cross-cultural measurement differences may affect score interpretation. Fifth, the study included school-attending adolescents only, so findings may not generalize to out-of-school adolescents, including youth in remote or mobile households who may face different access barriers.

Nine respondents selecting an other sex/gender category were excluded from binary-sex comparative analyses because of the small subgroup but retained in the descriptive distribution for all 2852 records; this exclusion limits population coverage. In addition, record-level reasons were not retained for 42 records removed between quality control (2894 records) and the final analytic dataset (2852 records), so the potential for selection at this step cannot be assessed. Sixth, the analytic dataset did not contain school identifiers, strata, or survey weights. HC1 robust standard errors do not substitute for cluster-robust or survey-weighted analysis; unweighted proportions are not national prevalence estimates and model confidence intervals may be too narrow if school ICC is material. The approximate ICC sensitivity is heuristic and cannot recreate the original multistage design. Seventh, Model 2 conditions on perceived need; unmeasured determinants of both recognition and help-seeking could introduce selection bias, so stage-specific odds ratios should not be interpreted causally. Eighth, the functional-impact sensitivity analyses used smaller complete-case samples, so differences from the primary model may reflect both adjustment and sample selection. Finally, barriers such as stigma, confidentiality concerns, service availability, travel distance, cost, and prior service experiences were not directly measured, so proposed mechanisms remain hypotheses for future systems research.

Conclusions

Among school-attending Mongolian adolescents, the largest observed gap in the mental health support pathway occurred between recognizing a need and acting on it. Internalising burden was associated with greater recognition but lower help-seeking among adolescents who recognized a need, and this symptom-action pattern was the most robust inferential finding across sensitivity analyses. The large group who considered help but did not seek it had the highest mean symptom burden and represents a specific target for future systems research. Informal supporters were far more commonly reported than professional sources, although source-item nonresponse limits population interpretation. Mental health system development should therefore evaluate low-threshold school entry points, supported informal gatekeepers, clear referral routes, and progression from recognized need to appropriate care, while confirming geographic and phenotype-specific differences with cluster-adjusted and weighted data.

Abbreviations

aOR
adjusted odds ratio
CI
confidence interval
EACMHS
Eurasian Child Mental Health Study
GCAMHS
Global Child and Adolescent Mental Health Study
GSHS
Global School-based Student Health Survey

HC1
Huber-White heteroskedasticity-consistent covariance estimator
ICC
intracluster correlation coefficient
SD
standard deviation
SDQ
Strengths and Difficulties Questionnaire
STROBE
Strengthening the Reporting of Observational Studies in Epidemiology
VIF
variance inflation factor.

Declarations

Ethics approval and consent to participate

The study protocol was approved by the Research Ethics Review Committee of the Mongolian National University of Medical Sciences on 20 January 2023 (Meeting/Approval No. 2023/3-01). The study was conducted in accordance with the Declaration of Helsinki. Administrative permission was obtained from education authorities and participating schools. Written informed consent was obtained from parents or legal guardians, and written assent was obtained from participating adolescents before survey administration. Participation was voluntary and data were collected anonymously.

Consent for publication

Not applicable. The manuscript contains no identifiable individual participant information.

Availability of data and materials

The datasets analysed during the current study are not publicly available because they contain sensitive mental health information from minors and are subject to ethical and institutional data-protection restrictions, but a de-identified minimal dataset and the analysis code are available from the corresponding author on reasonable request, subject to approval by the GCAMHS network and the relevant ethics committee.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

IB, EL, and KUM contributed to investigation, data curation, field coordination, validation, and interpretation. XZ, KZ, and AS contributed to methodology, formal analysis, validation, visualization, and critical revision. OD and DG contributed to conceptualization, methodology, supervision, project administration, interpretation, and revision of the manuscript. All authors read and approved the final manuscript and agree to be accountable for the work.

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Authors' information

Not applicable.

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Figures

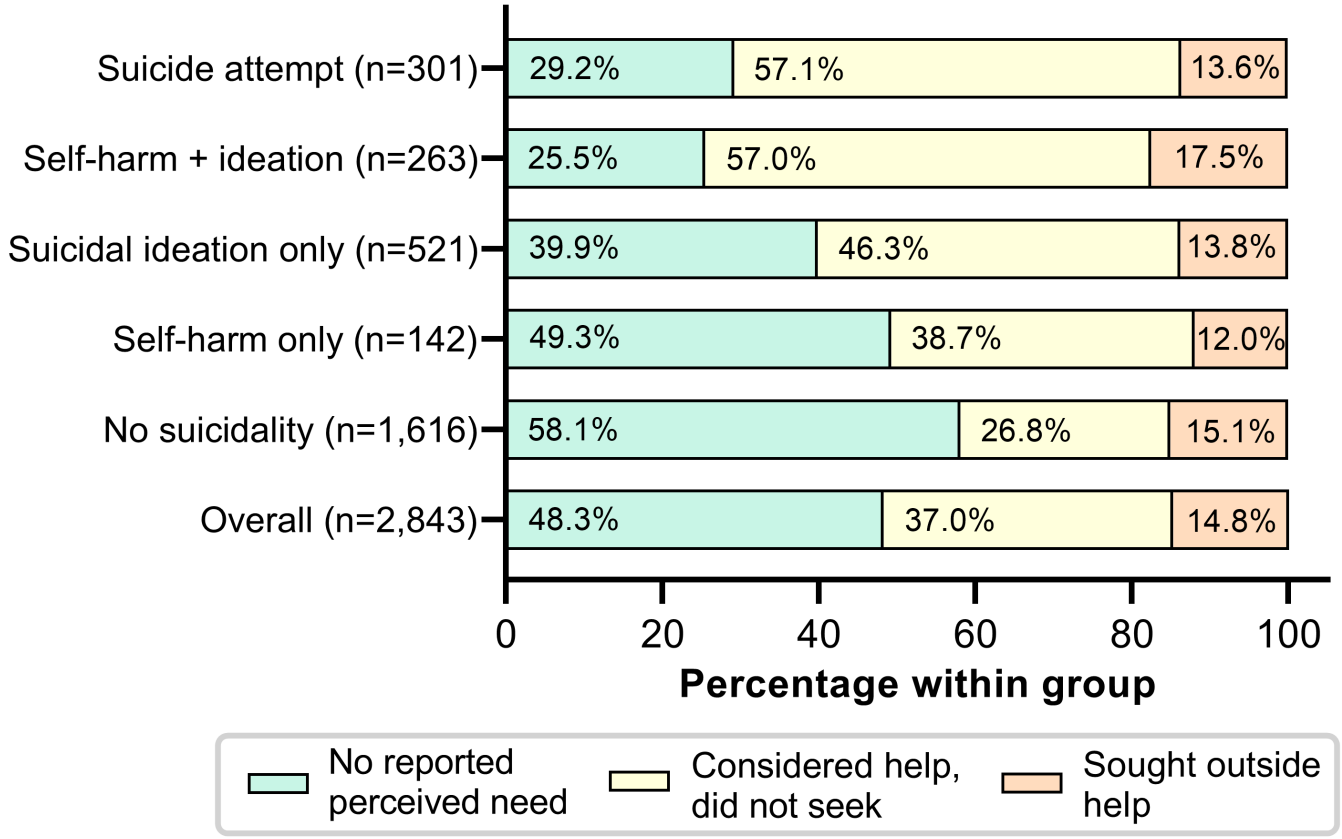


Figure 1

Help-seeking pathway overall and by suicidality phenotype

Stacked bars show unweighted proportions reporting no perceived need, considering outside help without seeking, and seeking outside help overall and within each mutually exclusive suicidality phenotype. Percentages are within-group descriptive estimates from the primary analytic sample (N=2843). Group Ns: overall 2843; no suicidality 1616; self-harm only 142; suicidal ideation only 521; self-harm plus ideation 263; suicide attempt 301. Categories reflect one retrospective self-report item rather than prospectively observed successive steps. Seeking outside help is not equivalent to receiving clinical treatment.

Supplementary Files

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