Journal of Affective Disorders 381 (2025) 121–130

Contents lists available at ScienceDirect

Journal of Affective Disorders

journal homepage: www.elsevier.com/locate/jad

Research paper

Inequalities in the utilisation of mental health services amongst different clusters of Australian children and adolescents

Nahida Afroz [a,b,*], Enamul Kabir [b], Khorshed Alam [c]

[a] Department of Statistics, Faculty of Science, Comilla University, Cumilla 3506, Bangladesh
[b] School of Mathematics, Physics, and Computing, Faculty of Health, Engineering and Sciences, University of Southern Queensland, Toowoomba, Queensland 4350, Australia
[c] School of Business, Faculty of Business, Education, Law & Arts, University of Southern Queensland, Toowoomba, Queensland 4350, Australia

ARTICLE INFO

Keywords:
Adolescent
Latent class analysis
Mental and/or behavioural disorders
Suicidality
Healthcare service use

ABSTRACT

Aims: To investigate the inequalities in mental health service utilisation amongst socio-demographic classes of Australian children and adolescents diagnosed with major mental and/or behavioural disorders, and suicidality.
Methods: A nationally representative sample of Australian children and adolescents was assessed, comprising 2898 parent and 1736 child participants. The Bolck, Croon, and Hagenaars (BCH) method was applied to pre-identified latent classes to determine adjusted class membership. Logistic regressions and predictive marginal analysis examined associations between these classes and mental health service utilisation in three scenarios: overall, with mental and/or behavioural disorders, and with suicidality.
Results: Children and adolescents in Class 1 (Underprivileged) characterised by low socio-economic status and non-intact families showed the highest prevalence of mental and/or behavioural disorders and suicidality and the highest utilisation of mental health services. Classes 2 (Low-Skilled but Cohesive) and 4 (Affluent Single Parent) had higher prevalence rates of disorders and suicidality than Classes 3 (Stable Middle Class) and 5 (Privileged). However, Class 4 utilised services less than Classes 3 and 5, while Class 2 had the lowest utilisation amongst all classes, despite higher disorder prevalence.
Conclusions: The study highlights significant disparities in mental health service utilisation across socio-demographic classes. Children and adolescents from underprivileged and non-intact family backgrounds face the highest burden of mental health issues but also utilise services more frequently. In contrast, Classes 2 and 4, despite higher disorder prevalence, underutilise services, indicating barriers to access. Government initiatives should focus on improving parental awareness, family structures, and socio-economic conditions to enhance service utilisation and reduce mental health disparities.

1. Introduction

Mental disorders are widespread amongst children and adolescents, often receiving inadequate treatment (Jörg et al., 2016). Following cancer and cardiovascular diseases, mental disorders are classified as the third most common type of disease (Australian Institute of Health and Welfare (AIHW), 2019). Like other healthcare domains, mental health has shifted towards secondary prevention, aiming to identify and address mental disorders at their earliest stages (Colizzi et al., 2020). Relying solely on mental health professionals for mental health promotion and prevention is unrealistic; integrated services are essential to broaden interventions and reduce long-term risks (Colizzi et al., 2020). The link between mental disorders and an increased risk of suicidal thoughts and behaviours is well documented (Connor and Nock, 2024; De Luca et al., 2016). Research indicates that almost 20 % of Australian youths aged 12–17 who have attempted suicide had an identifiable mental disorder (Zubrick and Jennifer Hafekost, 2016). The degree and duration of mental disorders might vary, and they may only manifest intermittently (Australian Institute of Health and Welfare (AIHW), 2019). Because the majority of mental disorders can be identified and efficiently managed, making use of mental health services as part of treating these conditions is crucial. This approach not only improves children's academic achievements and social involvement (Davis and Foster, 2005; Geierstanger et al., 2004; Walker et al., 2010) but also

* Corresponding author at: Department of Statistics, Faculty of Science, Comilla University, Cumilla 3506, Bangladesh.
E-mail addresses: n.afroz@cou.ac.bd, Nahida.Afroz@unisq.edu.au (N. Afroz), Enamul.Kabir@unisq.edu.au (E. Kabir), Khorshed.Alam@unisq.edu.au (K. Alam).

https://doi.org/10.1016/j.jad.2025.04.001
Received 14 June 2024; Received in revised form 23 February 2025; Accepted 1 April 2025
Available online 4 April 2025

corresponds to increased usage of mental health services in instances where severe mental disorders and their ramifications are prevalent (Australian Institute of Health and Welfare (AIHW), 2019).

Globally, suicidal behaviour amongst adolescents is a significant public health concern. According to the World Health Organization (WHO), suicide is the fourth leading cause of death amongst adolescents aged 15–19 worldwide (World Health Organization, 2019). Studies have shown that approximately 10–20 % of adolescents globally experience suicidal ideation, with higher rates observed in certain regions and populations (Franklin et al., 2017). Suicidal behaviour is strongly associated with mental health disorders such as depression, anxiety, and substance abuse. For example, research indicates that up to 90 % of adolescents who die by suicide have a diagnosable mental health condition (Hawton et al., 2012). These findings underscore the importance of early intervention and access to mental health services, particularly for adolescents at risk of suicidal behaviour.

Based on previous research, diverse socio-demographic factors, such as age, gender, parental income and education have a substantial impact on mental health service utilisation (Merikangas et al., 2009; Vu et al., 2018). Despite the considerable demand for mental health services, children from households with low income and limited education are less likely to access high-quality mental health services (Cully et al., 2008; Stacy et al., 2017). However, other studies have revealed no association between income and mental health service utilisation (Roy-Byrne et al., 2009; Vu et al., 2018). Some family-related factors such as family structures and family stress may influence the use of mental health services (Cheung et al., 2009; Johnson et al., 2016). Owing to the close relationship between mental illnesses and suicidality, comorbid illness factors, including co-occurring mental disorders and suicidality in an individual were also found to be significant predictors of the need for mental health services amongst adolescents (Cheung and Dewa, 2007; Johnson et al., 2016; Vu et al., 2018). According to Brent et al. (Brent, 1993), 35 %–50 % of adolescents with mental and behavioural disorders attempted suicide. These distinctions may be even more pronounced in Australia because of the difficulty that policymakers, healthcare providers and families have had in comprehending how to address this serious public health issue (Cheung and Dewa, 2007; Johnson et al., 2016; Vu et al., 2018).

Diverse socio-demographic factors are associated with the utilisation of mental health services in various ways. Therefore, investigating integrated patterns of socio-demographic behaviours rather than individual behaviours may offer more insight into diverse approaches to determine their impact on the usage of mental health services.

In a previous study (Afroz et al., 2023), latent class analysis (LCA) was used to separate the Young Minds Matter (YMM) data into five distinct classes (class 1: underprivileged; class 2: low skilled but cohesive; class 3: stable middle class; class 4: affluent single parent; class 5: privileged) on the basis of various socio-demographic characteristics, and significant variations in mental and behavioural health status were found amongst these classes. This study made us realise that the utilisation of mental health services by children and adolescents likely differs across the different clusters. Although many studies have explored the use of mental health services amongst children and adolescents in Australia, none of them have specifically focused on the service utilisation patterns within these various socio-demographic clusters. Consequently, a significant research gap exists in this area, which our study aims to address. The objective of this study is to examine the link between various socio-demographic classes and the utilisation of mental health services by children and adolescents aged 11–17 years (for parent data) and 13–17 years (for child data) who have been diagnosed with major types of mental and/or behavioural disorders and suicidality. Two research questions (RQs) have been formulated to achieve the study objectives. RQ1: What is the association between the utilisation of mental health services and latent class membership amongst children and adolescents, including those diagnosed with major types of mental or behavioural disorders? RQ2: Is there any significant association between specific latent classes and suicidality amongst children and adolescents? If so, which classes of children and adolescents experiencing suicidality exhibit higher vulnerability in terms of utilising mental health services?

2. Methodology

2.1. Data source and study design

Analysis was performed using cross-sectional data from the 2013–2014 YMM: The Second Australian Child and Adolescent Survey of Mental Health and Wellbeing. The YMM survey was conducted by the University of Western Australia (UWA) through the Telethon Kids Institute in partnership with Roy Morgan Research and the Australian Government Department of Health (AGDH). The AGDH and UWA Human Research Ethics Committee approved the survey (Hafekost et al., 2016; Lawrence et al., 2016). The survey details and methodology have been described elsewhere (Hafekost et al., 2016).

2.2. Study participants

This study focused on the 'use of mental health services' as the response variable. It assessed four major types of mental disorders in adolescents over the last year using the Diagnostic Interview Schedule for Children-Version IV (DISC-IV) modules, completed by parents only. Suicidality data came exclusively from the child data. Adolescents' service use was reported by parents in the parent data and by adolescents themselves in the child data. To analyse service utilisation amongst adolescents with mental disorders and/or suicidality across clusters in parent and child data, this study combined variables such as 'suicidality', 'any service', 'school service', 'telephone service', 'health service' and 'online service' from the child data into parent data. The accompanying Fig. 1 represents the entire data framework for this study. The parent data included 2898 children and adolescents aged 11–17 years, while the child data contained 1736 adolescents aged 13–17 years after merging service-related and suicidality variables. When exploring service access for those with mental disorders, the analysis involved 1067 individuals aged 11–17 years from the parent data and 622 aged 13–17 years from the child data. Additionally, this study included 142 adolescents aged 13–17 years to assess service use prevalence amongst those with suicidality.

For the suicidality question in the YMM data, 2499 respondents provided a response out of 2967 participants, leaving 468 missing values. This indicates that 15.7 % of young people did not respond to the suicidality question. Out of the 2499 responses, 220 (8.80 %) indicated suicidality. In our study, we analysed data from 1736 individuals, amongst whom 142 (8.18 %) exhibited suicidality.

In the original YMM dataset, there were 3334 samples for parent data and 2314 for the child data, with age restrictions of 11–17 years for the parent data and 13–17 years for the child data, respectively. After removing missing observations, our total sample sizes for the parent and child data were reduced to 2898 (86.92 %) and 1736 (75.02 %) correspondingly. With a significant proportion of data remaining in both the parent and child files after removing missing observations, we chose to conduct a complete case analysis rather than employing multiple imputation techniques.

2.3. Measurements

2.3.1. Services use

Consenting parents with children aged 11–17 years were questioned about the services used for their children's emotional or behavioural issues in the past year. Because of the perceived sensitivity of the question, self-reported service usage details were collected from adolescents aged 13–17 years in the child data. These adolescents accessed various mental health services, including health services, school

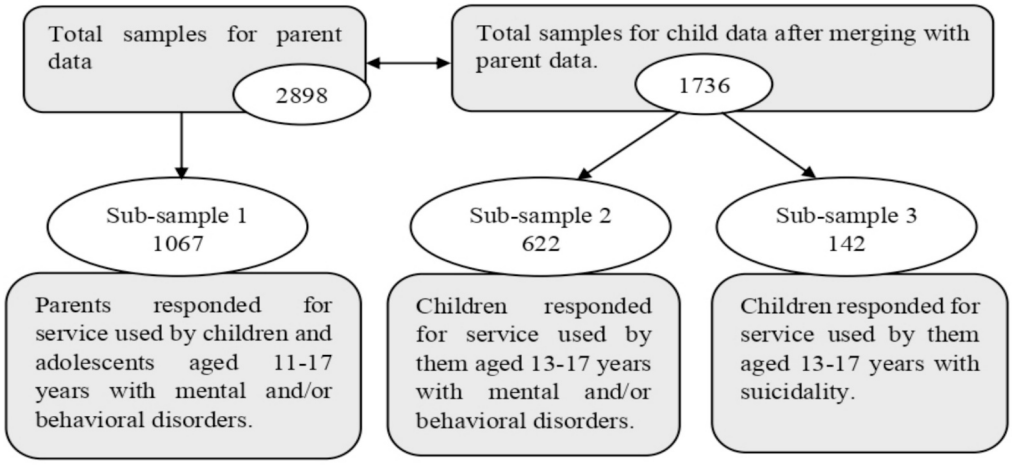

Fig. 1. Framework for selecting a sample for analysis.

services, telephone counselling, and online self-help (available only in the child data). School services encompassed special schools, classes and therapies attended by children, provided by educational institutions (Johnson et al., 2016). Each health service was categorised as binary, coded 1 for Yes and 0 for No. The variable 'Any service' indicated if adolescents had used any mental/behavioural disorder or suicidality service, with 'Yes' as 1 for usage and 'No' as 0.

2.3.2. Mental disorder

The presence of mental disorders in the past year was determined using seven modules of the DISC-IV survey (Lawrence et al., 2016). Major depressive disorders, attention-deficit hyperactivity disorder (ADHD), conduct disorder, and anxiety disorder were the four main categories of mental disorders. Anxiety disorder includes social phobia, separation anxiety disorder, generalized anxiety disorder, and obsessive-compulsive disorder (Hafekost et al., 2016). Both parents and child data from the YMM survey were used in this study. A binary variable was created to detect the presence of any mental disorder, as it only provides diagnostic information about each type of mental disorder in children and adolescents. In this case, a variable 'mental disorder' was considered in our analysis: whether the adolescent has had any of the above four major types of mental disorder in the past 12 months. Responses included 'Yes' (if a child has at least one of these mental health issues, the code is 1) or 'No' (coded as 0).

2.3.3. Suicidality

Suicidality was assessed using data from the 2009 Youth Risk Behaviour Survey at Standard High School, sourced from the Centers for Disease Control and prevention (Eaton et al., 2012). Suicidal ideation, plans and attempts were evaluated through three separate questions. All yes–no responses were coded as 1 for 'Yes' and 0 for 'No'. Information on suicidality was collected only from child data, and consenting parents were not notified of any responses in order to maintain confidentiality.

2.3.4. Socio-demographic factors

Based on the YMM survey, our recent study (Afroz et al., 2023) employed LCA to determine five distinct latent classes representing socio-demographic characteristics of Australian children and adolescents aged 11–17 years. In the current study, we also applied data from the same survey (YMM) to investigate the impact of different socio-demographic classes on the utilisation of mental health services by children and adolescents. The rationale for using LCA was to identify meaningful subgroups based on a combination of personal, residential, and socio-economic factors, including age, sex, regional status, family structure, parental education, income, and socio-economic status (as measured by the IRSAD quintile). This approach allowed us to capture the complex interplay of these variables rather than examining them individually, providing a more holistic understanding of how socio-demographic factors influence mental health service utilisation. The five latent classes identified were: Class 1 (Underprivileged) represents the lowest income, education and occupation levels, with most households falling into the most disadvantaged IRSAD quintile. Class 2 (Low-Skilled but Cohesive) comprises a substantial portion of households from the most disadvantaged IRSAD quintile and lower income bracket. Parental education and employment in Class 2 are notably unfavourable compared with those in the other classes. Class 3 (Stable Middle Class) encompasses moderately privileged individuals, with higher parental education and medium income, and largely comprises intact families with both parents residing together. Class 4 (Affluent Single Parent) resembles Class 3 but differs in variables such as - family structure and parental living status. Notably, class 4 lacks intact families, and children generally do not live with both parents, indicating poorer family functioning. By contrast, Class 5 (Privileged) represents the most advantaged group, characterised by high income, education and strong family structures. These classes were chosen because they represent meaningful and interpretable groupings of the population, capturing key socio-demographic characteristics that are known to influence mental health outcomes and service utilisation. Notably, an Australian study employed LCA to classify Australian society into five social classes based on economic, social, and cultural capital (Sheppard and Biddle, 2015). However, research applying LCA to socio-demographic factors amongst children and adolescents in Australia remains scarce. Our study contributes to this gap by using LCA to examine how socio-economic disparities influence mental health service use in young people. To address potential ambiguity in classification due to the probabilistic nature of LCA, we employed the Bolck, Croon, and Hagenaars (BCH) adjustment method to refine class probabilities and ensure robustness (Bolck et al., 2004; Vermunt, 2010). This approach facilitated the derivation of new classification probabilities by incorporating BCH weights and scaling, allowing us to establish adjusted classes based on these refined probabilities. More detailed information regarding the criteria and the process used to identify these clusters can be found in the earlier studies (Afroz et al., 2023).

2.4. Statistical analysis

Given the probabilistic nature of Latent Class Analysis (LCA), individuals were assigned to classes based on their probabilities of belonging to each class, which may introduce ambiguity in classification. To mitigate this challenge, we employed the Bolck, Croon, and Hagenaars (BCH) adjustment method to our original samples (n = 3152) from which we derived our latent classes (Afroz et al., 2023). This

approach facilitated the derivation of new classification probabilities by incorporating BCH weights and scales (Bauer, 2022; Dziak et al., 2017). Subsequently, we established new adjusted classes based on these refined probabilities. By considering these adjusted classes, our study investigated the distribution and relationships between adolescents' mental and/or behavioural disorders, suicidality and service utilisation.

Supplementary Table S1 illustrates the distribution of socio-demographic factors across different BCH adjusted classes for both the original sample (n = 3152, parent data) and the current sample (n = 2898 parent data; n = 1736 child data). Notably, the distribution of the current sample, encompassing both parent and child data, closely resembles that of the original dataset. Supplementary Table S2 shows the distribution of class membership across different classes before and after adjusting class probabilities.

Binary logistic regression models and predictive marginal analysis were employed to examine the association between adjusted class membership and service utilisation (any) amongst adolescents with mental and/or behavioural disorders and suicidality in both parent and child data. Additionally, binary regression models were employed to determine the association of the adjusted classes with the utilisation of specific mental health services, such as school, telephone, health and online services (child data only), amongst study participants. Predictive marginal analysis was used to measure the marginal effect on the probability scale to compare all classes with one another. All analyses were conducted using the R software package (version 4.2.1).

3. Results

Before examining the impact of different pre-identified clusters on the uses of mental health services by children and adolescents, the distribution of the service use by them with mental and/or behavioural disorders, and suicidality with various socio-demographic factors was observed. Children and adolescents with mental and/or behavioural disorders (CADWMD) (supplementary Table S3), particularly older adolescents (15–17 years), showed higher utilisation of all mental health services, including school services (SS), telephone services (TS), health services (HS), and online services (OS, available only in child data), as well as any service (AS). Notably, older adolescents demonstrated significantly higher use of TS in parent data (80.5 %) and OS in child data (70.9 %) compared to younger adolescents. Girls were significantly more likely than boys to use almost all services, including SS (65.8 %), HS (65.8 %), OS (62.5 %), and AS (58.1 %). However, in parent data, only TS was significantly associated with gender, with a higher proportion of females (73.7 %) utilising TS compared to males. Household-level variables such as “family blending” and “both parents living status in the household” significantly influenced the use of all types of mental health services, except for TS in both parent and child data. Children and adolescents living with both parents used more mental health services compared to their peers in both datasets, except for SS in parent data. According to parent data, those from intact families used fewer mental health services (all types) compared to their peers. However, in child data, adolescents from intact families used more OS and AS than their counterparts. Children and adolescents whose parents were employed and from medium- and low-income households utilised more mental health services in both datasets, likely due to a higher prevalence of mental and behavioural disorders in these groups. Parental education and IRSAD quintile did not affect the use of mental health services in child data but positively influenced the use of SS and HS in parent data.

The bivariate analysis of mental health service use amongst children and adolescents with suicidality (CADWSUI) (Supplementary Table S4) highlights significant differences based on various socio-demographic factors. Older adolescents (15–17 years) were more likely than younger adolescents (13 to <15 years) to access all types of mental health services in both parent and child data. In parent data, 73.1 % of older adolescents utilised HS, and 69.1 % used AS, indicating a higher reliance on these services compared to younger adolescents. Similarly, in child-reported data, older adolescents were more likely to utilise OS (72.8 %) and HS (69.4 %) compared to their younger counterparts. Sex differences were also evident, with females significantly more likely than males to use all mental health services across both parent and child data. Adolescents from intact families utilised all mental health services less frequently than those from other family structures, except for TS in parent data and OS in child data. Those living with both parents used more services (except TS in child data) in both datasets. According to child data, 84.6 % of adolescents living with their parents utilised TS mostly. Parental educational status did not significantly impact mental health service use in either dataset. Similarly, IRSAD quintile had no significant effect on most services, except for SS and AS in parent data and HS in child data, where children and adolescents from the most disadvantaged IRSAD quintile utilised these services more frequently.

3.1. Overview of mental health service utilisation amongst socio-demographic classes

Table 1 illustrates the distribution of class-wise mental health service utilisation amongst three different cases.

In parent data, children and adolescents from Class 1 (underprivileged) utilised almost all the services in all three cases, except for telephone service. A similar pattern was observed in child data, with a few exceptions. For instance, children and adolescents belonging to Classes 3 (stable middle class) and 5 (privileged) were more likely to utilise online mental health services across all three cases. Specifically, individuals in Class 3 were more likely to utilise any mental health service overall. Although telephone service did not show a significant association with socio-demographic classes in parent data, it was significantly related to socio-demographic classes in cases 1 and 3 in child data. The results in Table 1 also indicate that, except for telephone service, children and adolescents in Classes 2 (low-skilled but cohesive) and 4 (affluent single parent) had the lowest mental health service utilisation across all cases in both parent and child data. Given the relatively high prevalence of mental disorders and suicidality in these groups (Table 2), their lower service utilisation rates highlight an important access gap that requires further investigation.

3.2. Prevalence of mental disorders and suicidality across socio-demographic classes

Table 2 presents the prevalence of suicidality amongst adolescents in different socio-demographic classes. Despite having the lowest class membership (12.1 %), Class 4 displayed a higher prevalence rate (9.1 %) of suicidality than Classes 2 (8.5 %), 3 (6.8 %) and 5 (5.9 %). Class 1 comprises 16.2 % of individuals, amongst whom 13.1 % exhibited suicidality, suggesting an average prevalence rate of 0.13 if all respondents belonged to this class. This class demonstrates significantly higher odds of suicidality (OR: 2.39, 95 % CI: 1.43, 3.99) compared to Class 5. While Classes 2, 3, and 4 had higher prevalence rates of suicidality than Class 5, the odds of suicidality in these classes did not differ significantly from those of Class 5.

3.3. Mental health service utilisation given disorder prevalence

3.3.1. Regression results

The binary logistic regression model for parent data shown in Table 3 (cases 1 and 2) indicates that children and adolescents from Classes 1 and 4 had higher odds of using any mental health service compared to their Class 5 counterparts. For case 1, the odds ratio (OR) for Class 1 was 3.13 (95 % CI: 2.38, 4.13), indicating that children and adolescents in Class 1 were 3.13 times more likely to use any mental health service compared to those in class 5. Similarly, for case 2, the OR for Class 1 was 3.56 (95 % CI: 2.61, 4.87), demonstrating a higher likelihood of service utilisation amongst children and adolescents in Class 1 than those in Class 5. Class 4 also showed significant associations with the utilisation

Table 1
Distribution of class-wise mental health service utilisation by children and adolescents.

	Adjusted classes	Parent data				Child data				
		School service (%)	Telephone service (%)	Health service (%)	Any service (%)	School service (%)	Telephone service (%)	Health service (%)	Online service (%)	Any service (%)
Case-1 (over all children and adolescents)	Class 1	32.6	24.0	30.4	29.9	27.6	27.7	26.9	14.4	17.6
	Class 2	14.6	24.0	13.4	13.6	13.3	14.9	13.4	15.8	16.6
	Class 3	19.8	20.0	20.4	21.1	21.5	23.4	21.9	25.0	23.7
	Class 4	16.4	16.0	17.3	18.0	16.6	25.5	16.9	15.0	15.1
	Class 5	16.4	16.0	18.5	17.3	21.0	8.5	20.9	29.7	27.0
	p-Value	<0.001	0.58	<0.001	<0.001	<0.001	0.003	<0.001	0.36	0.11
Case-2 (children and adolescents with MD)	Class 1	35.5	19.0	32.7	33.3	29.2	29.6	25.6	20.0	22.7
	Class 2	13.8	23.8	13.6	13.5	10.4	14.8	14.3	14.5	15.7
	Class 3	18.3	23.8	18.7	19.1	17.0	25.9	15.0	20.7	18.3
	Class 4	16.6	14.3	17.4	17.7	18.9	14.8	19.5	18.6	17.9
	Class 5	15.9	19.0	17.6	16.3	24.5	14.8	25.6	26.2	25.3
	p-Value	<0.001	0.88	<0.001	<0.001	<0.001	0.33	<0.001	0.10	0.00
Case-3 (adolescents with suicidality)	Class 1	34.5	25.0	34.3	33.8	30.6	50.0	35.2	21.1	26.5
	Class 2	14.5	25.0	11.9	11.3	11.3	10.0	9.9	12.7	13.3
	Class 3	18.2	25.0	17.9	19.7	17.7	5.0	16.9	22.5	18.4
	Class 4	16.4	12.5	16.4	16.9	16.1	30.0	14.1	18.3	17.3
	Class 5	16.4	12.5	19.4	18.3	24.2	5.0	23.9	25.4	24.5
	p-Value	0.00	0.82	<0.001	<0.001	0.02	<0.001	<0.001	0.44	0.02

Table 2
Class-wise distribution of suicidality of children and adolescents.

	Parent and child data (adolescents aged 13–17 years, n = 1736)		
Latent classes	Predicted class membership n (%)	Suicidality	
		n (%)	OR (95%CI)
Class 1	282 (16.2)	37 (13.1)	2.39***(1.43,3.99)
Class 2	271 (15.6)	23 (8.5)	1.46 (0.83, 2.60)
Class 3	482(27.8)	33 (6.8)	1.16 (0.69, 1.96)
Class 4	230 (13.2)	21 (9.1)	1.59 (0.88, 2.87)
Class 5	471 (27.1)	28 (5.9)	Ref. category: Class 5 (Privileged class)
Total	1736 (100.0)	142 (8.2 %)	
P-value (chi-square)	0.008		

Note: Row and column percentages were used in suicidality and predictive class membership respectively. OR: Unadjusted odds ratio.

of any mental health service in cases 1 and 2, with ORs of 2.38 (95 % CI: 1.75, 3.25) and 2.36 (95 % CI: 1.66, 3.35) respectively.

However, any service accessed by children and adolescents with suicidality (CADWSUI, case 2) in parent data was significantly associated with Class 1 only and the adolescents were 3.28 times more likely to use any mental health service in comparison to those in class 5 with a 95 % confidence interval of 1.64–6.55. In child data, adolescents from Class 4 did not demonstrate any significant differences in the utilisation of mental health services across all cases. Children and adolescents with mental and/or behavioural disorders (case 2) and suicidality (case 3) from Class 1 were respectively 1.61 and 1.89 times more likely to utilise any service compared to those in Class 5 (95 % CI: 1.07, 2.42 for case 2; and 1.03, 3.36 for case 3).

3.4. Predictive marginal analysis

Because the odds ratio (OR) only allows comparisons with the reference group, this study measured the marginal effect on the probability scale to compare all classes with one another. Fig. 2(A) in parent and child data shows that Classes 1 and 4 had a higher probability of

Table 3
Inequality in any mental health service used by children and adolescents.

Latent classes (ref. Class 5: privileged)	Any service					
	Case 1: service accessed by whole sample (overall children and adolescents)[a]		Case 2: service accessed by CADWMD		Case 3: service accessed by CADWSUI	
	Co-efficient	OR (95 % CI)	Co-efficient	OR (95 % CI)	Co-efficient	OR (95 % CI)
Parent data	n = 2898 for case 1 and case 2				n = 1736 for case 3	
Class 4: affluent single parent	0.87***	2.38 (1.75, 3.25)	0.86***	2.36 (1.66, 3.35)	0.66	1.94 (0.87, 4.32)
Class 3: stable middle class	0.19	1.2 (0.91, 1.61)	0.14	1.15 (0.82, 1.61)	0.05	1.05 (0.49, 2.27)
Class 2: low skilled but cohesive	0.25	1.28 (0.93, 1.76)	0.30	1.35 (0.93, 1.95)	0.07	1.07 (0.44, 2.62)
Class 1: underprivileged	1.14***	3.13 (2.38, 4.13)	1.27***	3.56 (2.61, 4.87)	1.19***	3.28 (1.64, 6.55)
Child data	n = 1736 for cases 1, 2 and 3					
Class 4: affluent single parent	0.19	1.21 (0.87, 1.70)	0.42	1.50 (1.00, 2.39)	0.40	1.49 (0.78, 2.83)
Class 3: stable middle class	−0.21	0.81 (0.61, 1.08)	−0.39	0.68 (0.45, 1.03)	−0.33	0.72 (0.39, 1.35)
Class 2: low skilled but cohesive	0.10	1.10 (0.80, 1.53)	0.09	1.09 (0.70, 1.70)	−0.06	0.94 (0.47, 1.88)
Class 1: underprivileged	0.12	1.13 (0.82, 1.56)	0.48*	1.61 (1.07, 2.42)	0.64*	1.89 (1.06, 3.36)

Note: OR-Unadjusted Odds Ratio; CI-Confidence interval; CADWMD: Children and adolescents with mental and/or behavioural disorders; CADWSUI: Children and adolescents with suicidality.
* $p < 0.05$.
*** $p < 0.001$.
[a] Overall sample included all the children and adolescents with and without mental and/or behavioural disorders and suicidality.

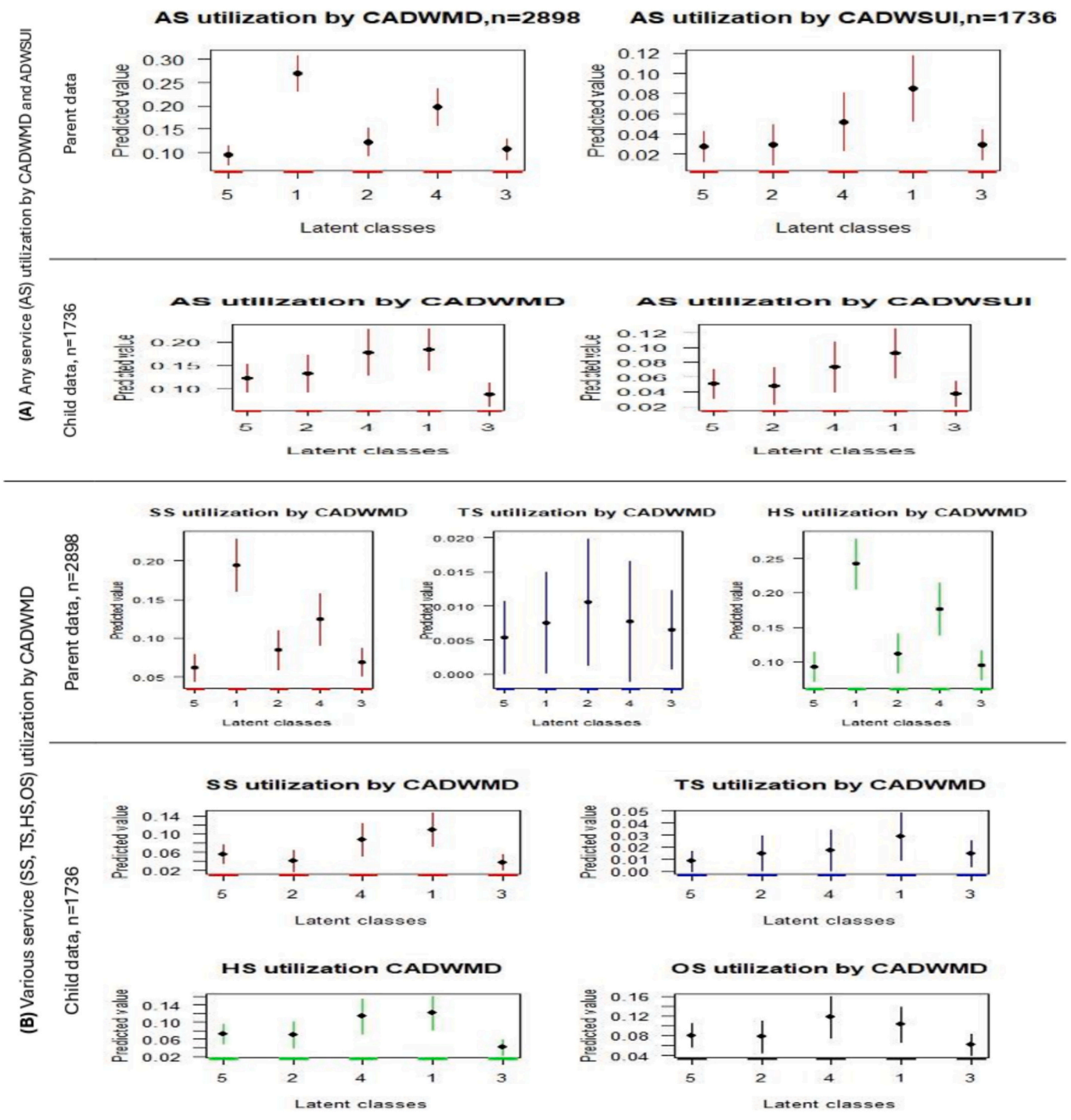

Fig. 2. (A) Predictive margins of any mental health service (AS) usage by CADWMD and CADWSUI; (B) Predictive margins of various service (SS-School service; TS-Telephone service; HS-Health service; OS-Online service) utilisation by CADWMD.

using any mental health services than the other classes, and Class 4 had a wider confidence interval, indicating higher uncertainty.

In child data, Class 3 had the lowest utilisation of mental health services amongst CADWMD and CADWSUI. Parent data (Fig. 2(B)) revealed that CADWMD in Class 1 had a significantly higher probability of utilising school and health services than those in the other classes. Class 2 had a significantly lower probability of utilising these services despite having a higher prevalence of mental and/or behavioural disorders. Children and adolescents in Class 5 exhibited higher utilisation of school, health and online services than those in Class 3, based on the child data in Figs. 2(B) and 3.

CADWSUI in child data (Fig. 3) in Classes 1 and 4 had a higher probability of using telephone services, whereas no significant differences were found in the other cases. Regarding mental health services, adolescents in Class 4 (child data) had a slightly higher likelihood of using online services compared to those in Class 1, but this difference

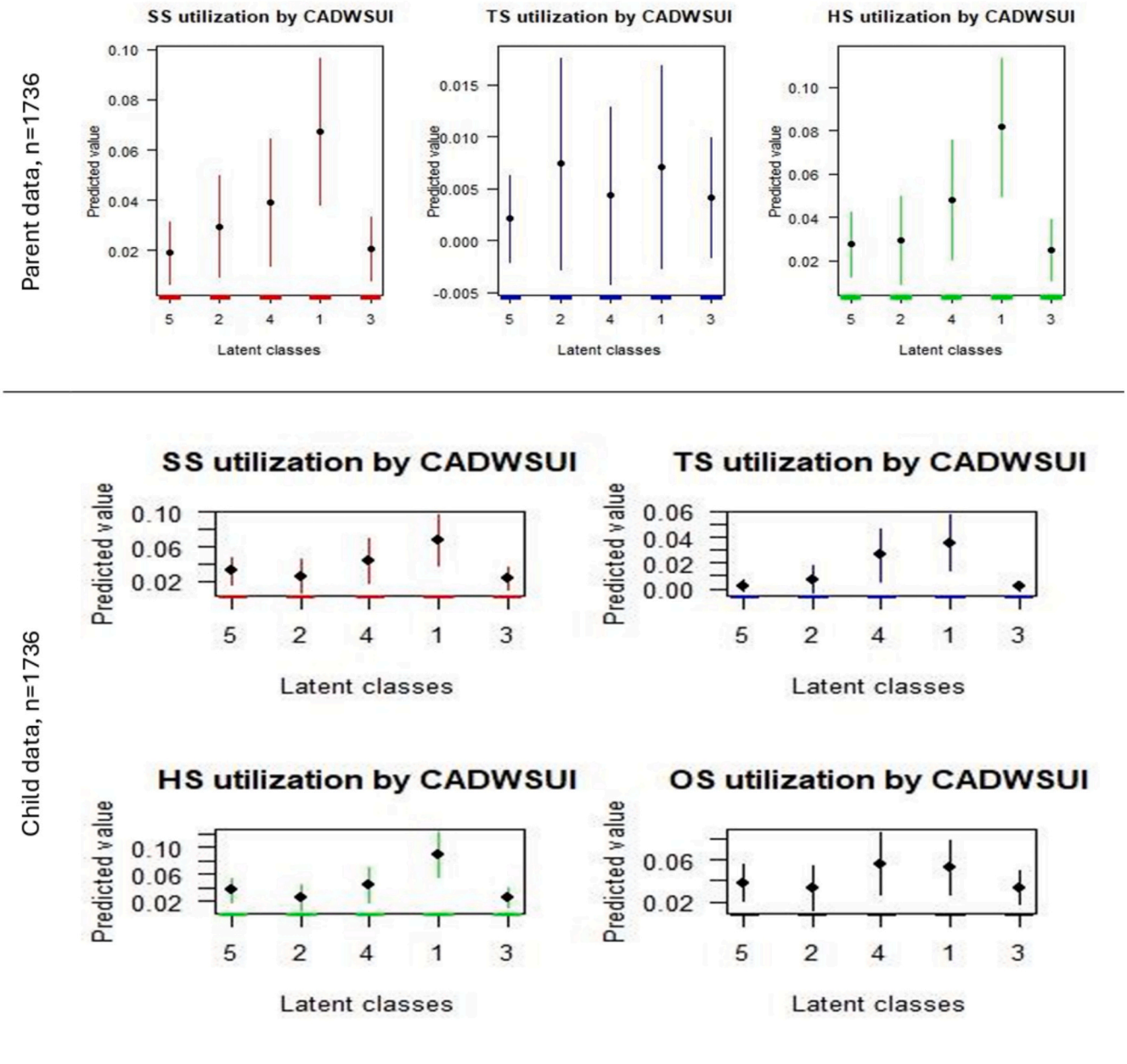

Fig. 3. Marginal plot of various mental health service utilisation by ADWSUI in parent and child data.

was not statistically significant.

4. Discussion

This study aimed to explore mental health service utilisation variations in children and adolescents across three cases within five socio-demographic classes. Using a representative Australian sample, the analysis considered all individuals, those with mental/behavioural disorders, and CADWSUI. The socio-demographic classes adjusted through the BCH methods, originated from the classification probabilities of LCA, which were derived from our recent study that applied LCA to socio-demographic factors (Afroz et al., 2023). The findings illuminate service utilisation differences amongst children and adolescents based on their adjusted socio-demographic class membership.

The established link between mental/behavioural disorders and suicidality carries significant implications for mortality, disability and global healthcare costs (Kessler et al., 2005; Rhodes et al., 2006; Slade et al., 2009; Vu et al., 2018). In Class 1 (underprivileged), the prevalence of mental disorders and suicidality was higher compared to that in the other classes in parent and child data. Untreated disorders can lead to suicidal ideation, often accompanied by various other mental issues (Ji et al., 2022). Service utilisation, especially 'any service', differed significantly across socio-demographic factors, highlighting disparities in family structure variables and socioeconomic variables amongst predefined classes.

The findings of this study highlight the increased vulnerability of children and adolescents from underprivileged and non-intact family structures to mental health challenges, including suicidality. These findings resonate with global research, which consistently identifies socio-economic disadvantages and family instability as key risk factors for suicidal behaviour amongst adolescents (Franklin et al., 2017; World Health Organization, 2019). For instance, studies from diverse cultural

and economic contexts have demonstrated that adolescents from low-income households and fractured family environments are at a significantly higher risk of experiencing suicidal ideation and attempts (Franklin et al., 2017). This underscores the importance of addressing structural inequalities and providing targeted mental health interventions for these high-risk groups. The alignment of our findings with global trends reinforces the universality of these risk factors and highlights the need for culturally sensitive and context-specific interventions to reduce adolescent suicidality.

Previous research has shown that girls and women are generally more likely to seek mental health services compared to boys and men. This could be due to differences in help-seeking behaviour, with females being more likely to express emotional distress and seek help (Mahsoon et al., 2020). In our study, we observed that female with mental and/or behavioural disorders and suicidality utilised mental health services more frequently than males. This aligns with existing literature and suggests that gender may play a role in service utilisation patterns (Mahsoon et al., 2020).

Age may influence mental health service utilisation, as older adolescents may have greater access to services or increased awareness of their mental health needs. In our study, older adolescents were more likely to utilise various mental health services, particularly online services, possibly due to their greater familiarity with digital platforms and preference for self-directed care. This suggests that digital mental health interventions may be particularly effective for adolescents who are more comfortable with technology and independent help-seeking strategies.

Despite showing a lower prevalence of mental/behavioural disorders (Afroz et al., 2023) and suicidality, children and adolescents in class 5 exhibited higher utilisation of mental health services than those in the other classes. This higher utilisation could stem from elevated awareness and comprehension of mental health concerns and treatment in these socio-demographic contexts. Parents play a significant role in encouraging their children to seek assistance and in providing strategies for psychological issues. Stable marriages and emotional closeness amongst parents correlate with positive attitudes towards addressing children's mental health concerns (Mahsoon et al., 2020).

In child data (case 1), adolescents in Classes 3 and 5 exhibited a greater tendency to use online services than those in the other classes. This preference likely arises from easier Internet access and supportive circumstances. Class 4 showed a higher prevalence of mental/behavioural disorders and suicidality but used mental health services less frequently than classes 3 and 5, except for telephone service, across all examined cases (cases 1–3). Past studies (Nylund et al., 2007) have indicated higher rates of mental disorder and suicidality in children from non-intact families. Class 2 adolescents (worst for education and occupational attainment, intact families) had the least service utilisation (except for telephone service) in parent and child data, despite a higher prevalence of mental/behavioural disorders and suicidality than those in Classes 3 and 5. Consistent with the findings of prior research (Devkota et al., 2021), lower socio-economic status and education levels hindered service access. In our study, Class 2 displayed characteristics such as the lowest education/occupation, second-lowest family income and lower socio-economic status within the IRSAD quintile. Hence, Classes 2 and 4 are identified as the most vulnerable classes in terms of accessing mental health services.

The binary logistic regression model revealed that in both parent and child data, Class 1 had higher odds of utilising any mental health services (except in case 1 of child data) than Class 5. The traits of Class 1 suggest an underprivileged group, which, according to previous research, often utilises mental health services more frequently, consistent with the higher prevalence of adolescent mental health issues (Johnson et al., 2016; Lawrence et al., 2015). CADWSUI in class 4 showed no significant relationship with mental health service use in both parent and child data, despite higher suicidality rates than Classes 2, 3 and 5. In parent data, Class 4 adolescents, overall (case 1) and those with mental/behavioural disorders (case 2), had greater odds of using services than Class 5 adolescents. No significant difference in service utilisation was observed amongst Class 2 adolescents across cases, despite higher rates of mental/behavioural disorders and suicidality than those in Classes 3 and 5. This association may be linked to a potential lack of awareness of service access, considering the lower level of parental education and employment in Class 2 (Afroz et al., 2023). Positive family structures have been linked to better mental health service usage (Vu et al., 2018), yet adolescents in Class 2, despite having intact family structures, encountered barriers such as parents' with low level of education and occupation, resulting in reduced service use.

The predictive marginal analysis illustrated the relationship between mental health services and socio-demographic classes in both parent and child data. CADWMD in class 1 had significantly higher odds of using school and health services than those in the other classes. Conversely, CADWMD in Class 2 was less likely to use these services, despite having a higher prevalence of mental/behavioural issues. This finding could stem from a limited understanding of factors influencing mental health service usage amongst children and adolescents. For instance, Class 2's main drawbacks were poor education and occupational status, even though they had intact families. Consequently, despite higher disorder rates, they struggle to access mental health services. Classes 1 and 4 in child data had a higher likelihood of using telephone services, though these services alone do not ensure comprehensive mental healthcare. Parental awareness plays a crucial role in providing psychosocial care, as underscored by research (Wahlin and Deane, 2012), (Radovic et al., 2015). Given the importance of early intervention in countering mental/behavioural disorders and suicidality (Colizzi et al., 2020), policymakers should prioritise addressing the needs of specific groups who are not accessing required mental health services.

To reduce disorder prevalence and increase service utilisation, a dual approach is necessary, incorporating both prevention-focused and treatment-focused interventions. Prevention-focused interventions should aim to mitigate socioeconomic and family-related risk factors contributing to mental health issues. Expanding financial aid, employment opportunities, and educational support for disadvantaged families (Class 1) could reduce stressors associated with mental health problems. Similarly, strengthening family support programs, including relationship counselling and parenting workshops, may improve stability and reduce mental health risks in non-intact families (Class 4). Schools should also play a critical role in early intervention, integrating mental health education into curricula and implementing systematic mental health screenings to identify at-risk children before symptoms escalate. Treatment-Focused Interventions should target groups with high disorder prevalence but low service utilisation (Classes 2 and 4). Awareness campaigns should be launched to educate parents in Class 2 about available mental health services, addressing gaps in knowledge and accessibility. Expanding telehealth and subsidised services could further remove financial and geographical barriers, increasing access to professional mental health support. Additionally, targeted outreach and community-based engagement programs should be designed for underutilising groups to facilitate trust and encourage service uptake. By addressing both risk factors and service access barriers, these policy recommendations can contribute to more equitable mental health service utilisation amongst Australian children and adolescents.

4.1. Strengths and limitations

To our knowledge, this is the first study that has measured the inequalities in mental health service usage via adjusted cluster membership, employing nationally representative YMM data. Nonetheless, limitations are noted. Firstly, the absence of validated assessment tools and the reliance on self-reported child data for suicidality may result in stigma-induced underreporting. Secondly, the study lacks explicit information on cultural barriers, which may influence mental health service utilisation, because relevant variables related to cultural capital were not available in the dataset. Thirdly, our study utilised a complete

case analysis approach, omitting missing values from the dataset. This strategy, while common, may introduce biases and limit the generalisability of our findings. The exclusion of missing data assumes no selective missingness, which may not be realistic in practice. Consequently, there is a potential for biased results, and the reliability of our conclusions may be affected. Fourthly, despite the application of BCH on LCA to adjust class probabilities, there remains uncertainty regarding the accuracy of the class assignments. The omission of 'don't know' responses could also impact the results. Fifthly, this study did not examine the prior history of mental health issues for parents and adolescents, as the focus was on understanding the patterns of mental health service utilisation across socio-demographic clusters. While parental and adolescent mental health history could provide additional insights into mental health outcomes and service utilisation, future research could explore this aspect to provide a more comprehensive understanding of the factors affecting access to mental health care. Additionally, reliance on cross-sectional data and self-reporting compromises the measurement's reliability and validity, hindering the establishment of causal relationships. Lastly, YMM data, being 10 years old, predates the impact of COVID-19 and advancements in technology, both of which could have influenced telehealth and online mental health services.

4.2. Conclusions

The study reveals significant differences in the utilisation of mental health services amongst socio-demographic classes in children and adolescents. Amongst these, three distinct groups emerge as particularly at risk in terms of their mental health service utilisation. The first group (Class 1) comprises individuals from the lowest socio-economic backgrounds (characterised by parental low education, occupation, household income, and IRSAD quantile) and non-intact family structures. This group demonstrates a higher propensity to utilise mental health services across various indicators, indicating a higher prevalence of mental and/or behavioural disorders and suicidality within this group. Increased service utilisation efforts are needed to address their elevated rates of mental health issues. The second group consists of individuals with relatively higher socio-economic status but non-intact family structures (Class 4). This group exhibits limited utilisation of mental health services, except for telephone services in child data, suggesting potential issues with communication within non-intact families. The final group comprises individuals with lower socioeconomic status but intact family structures (Class 2). They encounter socio-economic challenges and tend to use fewer health services. To improve access to mental health services, governmental efforts should focus on reaching children and adolescents from non-intact families and experiencing socio-economic difficulties through awareness initiatives targeting parents, caregivers, teachers, and students. Furthermore, implementing family support programs aimed at strengthening family structures and bolstering socio-economic status would be beneficial.

CRediT authorship contribution statement

Nahida Afroz: Writing – review & editing, Writing – original draft, Software, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Enamul Kabir:** Writing – review & editing, Supervision, Conceptualization. **Khorshed Alam:** Writing – review & editing, Supervision.

Consent for publication

The manuscript used secondary data and did not contain any identifiable data of the participants. Hence, informed consent for publication was not needed.

Ethics approval and consent to participate

For this research, the study utilised secondary data sourced from the YMM survey dataset. Written informed consent for participation was obtained from all survey participants who voluntarily chose to participate. The research was conducted with ethical approval obtained from the Human Research Ethics Committee of the University of Southern Queensland. The university granted written approval via email in response to our Human Research Ethics (HRE) application.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgments

The paper is a part of the PhD research of the first author. The authors would like to thank the Telethon Kids Institute, The University of Western Australia, Roy Morgan Research, the Australian Government Department of Health for conducting the survey, and the Australian Data Archive for providing the YMM data set.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jad.2025.04.001.

Data availability

The data utilised in this study were obtained from the Second Australian Child and Adolescent Survey of Mental Health and Wellbeing. Due to certain data usage restrictions, the authors are unable to publicly share this data. The approval of the data application depends upon a signed confidentiality agreement. Those interested in accessing this data should contact the Young Minds Matter: The Second Australian Child and Adolescent Survey of Mental Health and Wellbeing Dataverse through email or lodge an online application from the following web link: http://www.youngmindsmatter.org.au/information/for-researchers/.

References

Afroz, N., Kabir, E., Alam, K., 2023. A Latent Class Analysis of the Socio-demographic Factors and Associations With Mental and Behavioral Disorders Among Australian Children and Adolescents, pp. 1–17. https://doi.org/10.1371/journal.pone.0285940.

Australian Institute of Health and Welfare (AIHW), 2019. Mental Health Services in Brief 2019, vol. 53(9), pp. 1689–1699.

Bauer, J., 2022. A primer to latent profile and latent class analysis. In: Professional and Practice-based Learning, vol. 33. https://doi.org/10.1007/978-3-031-08518-5_11.

Bolck, A., Croon, M., And, & Hagenaars, J., 2004. Estimating latent structure models with categorical variables: one-step versus three-step estimators. Polit. Anal. 12 (1), 3–27. https://doi.org/10.1093/pan/mph001.

Brent, D.A., 1993. Depression and suicide in children and adolescents. Pediatr. Rev. 14 (10), 380–388. https://doi.org/10.1542/pir.14-10-380.

Cheung, A.H., Dewa, C.S., 2007. Mental health service use among adolescents and young adults with major depressive disorder and suicidality. Can. J. Psychiatr. 52 (4), 228–232. https://doi.org/10.1177/070674370705200404.

Cheung, A., Dewa, C., Cairney, J., Veldhuizen, S., Schaffer, A., 2009. Factors associated with use of mental health services for depressed and/or suicidal youth aged 15–24. Community Ment. Health J. 45 (4), 300–306. https://doi.org/10.1007/s10597-009-9205-8.

Colizzi, M., Lasalvia, A., Ruggeri, M., 2020. Prevention and early intervention in youth mental health: is it time for a multidisciplinary and trans-diagnostic model for care? Int. J. Ment. Heal. Syst. 14 (1), 1–14. https://doi.org/10.1186/s13033-020-00356-9.

Connor, R.C.O., Nock, M.K., 2024. Suicide 2 the psychology of suicidal behaviour. Lancet Psychiatry 1 (1), 73–85. https://doi.org/10.1016/S2215-0366(14)70222-6.
Cully, J.A., Tolpin, L., Henderson, L., Jimenez, D., Kunik, M.E., Petersen, L.A., 2008. Psychotherapy in the veterans health administration: missed opportunities? Psychol. Serv. 5 (4), 320–331. https://doi.org/10.1037/a0013719.
Davis, M.A., Foster, E.M., 2005. A stochastic dynamic model of the mental health of children. Int. Econ. Rev. 46 (3), 837–866. https://doi.org/10.1111/j.1468-2354.2005.00348.x.
De Luca, S.M., Franklin, C., Yueqi, Y., Johnson, S., Brownson, C., 2016. The relationship between suicide ideation, behavioral health, and college academic performance. Community Ment. Health J. 52 (5), 534–540. https://doi.org/10.1007/s10597-016-9987-4.
Devkota, G., Basnet, P., Thapa, B., Subedi, M., 2021. Factors affecting utilization of mental health services from Primary Health Care (PHC) facilities of western hilly district of Nepal. PLoS One 16 (4 April), 1–22. https://doi.org/10.1371/journal.pone.0250694.
Dziak, J.J., Bray, B.C., Wagner, A.T., 2017. LCA_Distal_BCH SAS Macro Users' Guide (Version 1.1). http://methodology.psu.edu.
Eaton, D.K., Kann, L., Kinchen, S., Shanklin, S., Flint, K.H., Hawkins, J., Harris, W.A., Lowry, R., McManus, T., Chyen, D., Whittle, L., Lim, C., W., H., Centers for Disease Control and Prevention, 2012. Youth risk behavior surveillance - United States, 2011. MMWR Surveill. Summ. 61 (4), 1–162.
Franklin, J.C., Ribeiro, J.D., Fox, K.R., Bentley, K.H., Kleiman, E.M., Jaroszewski, A.C., Chang, B.P., Nock, M.K., 2017. Risk factors for suicidal thoughts and behaviors: a meta-analysis of 50 years of research, 143 (2), 187–232.
Geierstanger, Sara Peterson, Amaral, Gorette, Mansour, Mona, W., S.R., 2004. School-Based Health Centers and Academic Performance Research Challenges.pdf. https://doi.org/10.1111/j.1746-1561.2004.tb06627.x.
Hafekost, J., Lawrence, D., Boterhoven De Haan, K., Johnson, S.E., Saw, S., Buckingham, W.J., Sawyer, M.G., Ainley, J., Zubrick, S.R., 2016. Methodology of young minds matter: the second Australian child and adolescent survey of mental health and wellbeing. Aust. N. Z. J. Psychiatry 50 (9), 866–875. https://doi.org/10.1177/0004867415622270.
Hawton, K., Saunders, K.E.A., O'Connor, R.C., 2012. Self-harm and suicide in adolescents. Lancet 379 (9834), 2373–2382. https://doi.org/10.1016/S0140-6736(12)60322-5.
Ji, S., Li, X., Huang, Z., Cambria, E., 2022. Suicidal ideation and mental disorder detection with attentive relation networks. Neural Comput. & Applic. 34 (13), 10309–10319. https://doi.org/10.1007/s00521-021-06208-y.
Johnson, S.E., Lawrence, D., Hafekost, J., Saw, S., Buckingham, W.J., Sawyer, M., Ainley, J., Zubrick, S.R., 2016. Service use by Australian children for emotional and behavioural problems: findings from the second Australian Child and Adolescent Survey of Mental Health and Wellbeing. Aust. N. Z. J. Psychiatry 50 (9), 887–898. https://doi.org/10.1177/0004867415622562.
Jörg, F., Visser, E., Ormel, J., Reijneveld, S.A., Hartman, C.A., Oldehinkel, A.J., 2016. Mental health care use in adolescents with and without mental disorders. Eur. Child Adolesc. Psychiatry 25 (5), 501–508. https://doi.org/10.1007/s00787-015-0754-9.
Kessler, R.C., Berglund, P., Demler, O., Jin, R., Merikangas, K.R., Walters, E.E., 2005. Lifetime prevalence and age-of-onset distributions of. Arch. Gen. Psychiatry 62 (June), 593–602. http://archpsyc.jamanetwork.com/article.aspx?doi=10.1001/archpsyc.62.6.593.
Lawrence, D., Johnson, S., Boterhoven De Haan, K., Ainley, J., 2015. The mental health of children and adolescents: report on the second Australian Child and Adolescent Survey of Mental Health and Wellbeing. In: The Physical Health of People With Mental Illness View Project Child Health Checkpoint View Project (Issue August). https://www.researchgate.net/publication/280783285.
Lawrence, D., Hafekost, J., Johnson, S.E., Saw, S., Buckingham, W.J., Sawyer, M.G., Ainley, J., Zubrick, S.R., 2016. Key findings from the second Australian Child and Adolescent Survey of Mental Health and Wellbeing. Aust. N. Z. J. Psychiatry 50 (9), 876–886. https://doi.org/10.1177/0004867415617836.
Mahsoon, A., Sharif, L., Banakhar, M., Alasmee, N., Almowallad, E., Jabali, R., Bahamil, A., Assur, S., 2020. Parental support, beliefs about mental illness, and mental help-seeking among young adults in Saudi Arabia. Int. J. Environ. Res. Public Health 17 (15), 1–11. https://doi.org/10.3390/ijerph17155615.
Merikangas, K.R., Nakamura, E.F., Kessler, R.C., 2009. Epidemiology of mental disorders in children and adolescents. Dialogues Clin. Neurosci. 11 (1), 7–20. https://doi.org/10.31887/dcns.2009.11.1/krmerikangas.
Nylund, K.L., Asparouhov, T., Muthén, B.O., 2007. Deciding on the number of classes in latent class analysis and growth mixture modeling: a Monte Carlo simulation study. Struct. Equ. Model. 14 (4), 535–569. https://doi.org/10.1080/10705510701575396.
Radovic, A., Reynolds, K., McCauley, H.L., Sucato, G.S., Stein, B.D., Miller, E., 2015. Parents' role in adolescent depression care: primary care provider perspectives. J. Pediatr. 167 (4), 911–918. https://doi.org/10.1016/j.jpeds.2015.05.049.
Rhodes, A.E., Bethell, J., Bondy, S.J., 2006. Suicidality, depression, and mental health service use in Canada. Can. J. Psychiatr. 51 (1), 35–41. https://doi.org/10.1177/070674370605100107.
Roy-Byrne, P.P., Joesch, J.M., Wang, P.S., Kessler, R.C., 2009. Low socioeconomic status and mental health care use among respondents with anxiety and depression in the NCS-R. Psychiatr. Serv. 60 (9), 1190–1197. https://doi.org/10.1176/ps.2009.60.9.1190.
Sheppard, J., Biddle, N., 2015. Social Class in a Ustralia Beyond the 'Working' and 'Middle' Classes. September, pp. 1–24.
Slade, Tim, Johnston, Amy, Oakley, Mark A., Browne, G.A., Whiteford, H., 2009. 2007 National Survey of mental health and wellbeing: methods and key findings. SAGE J. 43 (7). https://doi.org/10.1080/00048670902970882.
Stacy, H., Leandra, G., et al., 2017. Improving Mental Health Access for Low-income Children and Families in the Primary Care Setting, pp. 1–15. https://doi.org/10.1542/peds.2015-1175.
Vermunt, J.K., 2010. Latent class modeling with covariates: two improved three-step approaches. Polit. Anal. 18 (4), 450–469. https://doi.org/10.1093/pan/mpq025.
Vu, X.B. (Benjamin), Biswas, R.K., Khanam, R., Rahman, M., 2018. Mental health service use in Australia: the role of family structure and socio-economic status. Child Youth Serv. Rev. 93, 378–389. https://doi.org/10.1016/j.childyouth.2018.08.001.
Wahlin, T., Deane, F., 2012. Discrepancies between parent- and adolescent-perceived problem severity and influences on help seeking from mental health services. Aust. N. Z. J. Psychiatry 46 (6), 553–560. https://doi.org/10.1177/0004867412441929.
Walker, S.C., Kerns, S.E.U., Lyon, A.R., Bruns, E.J., Cosgrove, T.J., 2010. Impact of school-based health center use on academic outcomes. J. Adolesc. Health 46 (3), 251–257. https://doi.org/10.1016/j.jadohealth.2009.07.002.
World Health Organization, 2019. Suicide worldwide in 2019: global health estimates, World Health Organization, Geneva. https://apps.who.int/iris/rest/bitstreams/1350975/retrieve.
Zubrick, Stephen R., Jennifer Hafekost, W.J.B., 2016. Suicidal behaviours: prevalence estimates from the second Australian Child and Adolescent Survey of Mental Health and Wellbeing. SAGE J. 50 (9). https://doi.org/10.1177/0004867415622563.