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Social Support, Interpersonal Violence, Mental Health and Wellbeing in 16-Year-Olds During Covid-19

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Abstract: Growing research evidence on young people's mental health and wellbeing during Covid-19 has highlighted the importance of examining the social relationships and circumstances that surround adolescent life. This study analysed secondary data obtained from the first wave of the COVID-19 Social Mobility and Opportunities (COSMO) Study, which examined the mental health and wellbeing of young people. Through a series of multiple linear and binary logistic regression analyses, psychological distress, elevated symptoms of depression and generalised anxiety, and self-esteem and life satisfaction were examined in relation to physical health, social support, interpersonal violence (i.e., face to face bullying, cyberbullying, discrimination), and demographic background in 16-year-olds during the pandemic. The findings showed that young people were more likely to report higher psychological distress and elevated symptoms of depression and anxiety if they were female, had poor physical health and limited family and community support, and experienced bullying, cyberbullying, and discrimination. The same measures were also found to predict low self-esteem and life satisfaction. The findings have significant implications regarding the nature of mental health and wellbeing in young people and the importance of accounting for interpersonal violence and social support when examining mental health in 16-year-olds, especially during health crises. A multisectoral approach involving health and education sectors, in collaboration with family and community support services, is advocated to reduce interpersonal violence and support young people's mental health.

Keywords: *Bullying, cyberbullying, interpersonal violence, mental health, social isolation.*

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Introduction

The Covid-19 pandemic has triggered fundamental changes in the lives of young people, putting them at an increased risk of mental health difficulties, including PTSD, psychosis, mood disorders, and suicide (e.g., Liu et al., 2020; Newlove-Delgado et al., 2022; Racine et al., 2021) and concentration difficulties, irritability, restlessness, loneliness, and worry (e.g., Orgilés et al., 2020). Across the globe during the pandemic, the prevalence of depression and anxiety symptoms doubled among adolescents (Racine et al., 2021). In the UK, findings from the 2022 Mental Health of Children and Young People in England (MHCYP) Study showed that 18% of children aged 7 to 16 years and 22% of young women aged 17 to 24 years were likely to have mental ill health. Young people who experienced adversity in the form of pre-existing mental ill health or life-long illness and disability, and females in particular, were shown to have experienced reduced mental health and wellbeing during the pandemic (Newlove-Delgado et al., 2022; Stroud & Gutman, 2021).

A growing body of research on mental health and subjective wellbeing during Covid-19 (e.g., Banks & Xu, 2020; Henderson et al., 2020; Pierce et al., 2020; Stroud & Gutman, 2021) has mostly focused on children and young people's personal characteristics (e.g., gender), prior physical or mental illness and household factors (e.g., parenting, family income). It is less clear, however, the extent to which social factors, such as interpersonal violence and family and community connectedness, related to their mental health, self-esteem, and life satisfaction during Covid-19. Most studies on interpersonal violence during Covid-19 focused on domestic violence, and fewer studies (except for Ransing et al., 2020) examined associations between mental health and online harassment and discrimination in adolescents during the pandemic, using a large, national sample. Lack of social support, bullying, cyberbullying, and interpersonal discrimination are growing public health concerns associated with poor physical and mental health in people across ages (Vargas et al.,

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2020). Their impact is felt more keenly during health crises that often unveil existing inequalities and leave young people vulnerable.

Physical and mental health are intertwined. Children and adolescents with life-limiting conditions experience various health challenges that may make them more vulnerable to mental health problems, such as anxiety and depression (Barker et al., 2019; Cobham et al., 2020). However, studies on the incidence of anxiety and depression and physical ill health among this population during Covid-19 were limited. Pre-pandemic, Barker et al. conducted a meta-analysis of young people aged 6-25 and found the prevalence of reported anxiety and depression among children and young people with life-limiting conditions to be 19.1%. Likewise, Cobham et al. (2020) reviewed studies of under-18's with certain chronic medical conditions (i.e., asthma, congenital heart disease, diabetes, epilepsy, inflammatory bowel disease, juvenile idiopathic arthritis, and sickle cell disease) and found a higher prevalence of anxiety disorder compared to the general population. For asthma, inflammatory bowel disease, and sickle cell disease, in particular, the evidence indicated that anxiety was associated with adverse life-long outcomes.

Social support from family and friends has been linked to better mental health and higher quality of life in young people (e.g., Alsubaie et al., 2019; Qi et al., 2020). Qi et al. found adolescents during Covid-19 to present with increased symptoms of depression and anxiety, disproportionately affecting those with medium or low levels of social support (2020). Family relationships are closely related to the psychological well-being of young people, and low-quality family relationships characterized by indifference, rejection, and neglect often have a negative psychological impact on adolescents (Heshmati et al., 2021). Community support has also been shown to alleviate depression and anxiety and be protective of wellbeing (Cao et al., 2020). Covid-19 resulted in stress in families and communities due to social restrictions, loss of structure and freedom of movement, loss of income, and limited social support, which were found to be associated with an increased incidence of child abuse and neglect (Liu et al., 2020). For young people who have experienced traumatic events, social support has been found to be protective against a variety of mental health conditions (Price et al., 2018). Several explanations have been offered to understand the ways in which social support relates to mental health and well-being, mostly focusing on its function as a buffer and a resource. The "buffering-effect model" approaches social support as a buffer that protects young people's mental health and wellbeing in stressful situations (Cohen & Willis, 1985). The "conservation of resources" model suggests that social support provides an external supplement of resources that individuals can use to cope with stressful situations (Hobfoll et al., 2016).

Interpersonal violence in the form of bullying, including cyberbullying, and interpersonal discrimination has been found to have an adverse impact on adolescents at a time when social cognitive skills are developed and consolidated, making adolescents particularly vulnerable to the effects of bullying and discrimination (e.g., Benner et al., 2018; Kowalski & Limber, 2013; Price-Feeney et al., 2020; Vargas et al., 2020). Bullying involves repeated acts of aggression, often within power-imbalanced relationships or interactions (Copp et al., 2021). Involvement in bullying, as victim, perpetrator, or both, was found to associate with anxiety, depression, psychosocial difficulties, and self-harm in adolescents (Eyuboglu et al., 2021; Noret et al., 2020), as well as emotional and behavioural problems (Arslan et al., 2021). Specifically, in a cross-sectional study of 6202 middle and high school students, around a third of school bullying incidents were reported and were found to be associated with anxiety, depression, social difficulties, and self-harm behavior (Eyuboglu et al., 2021). The prevalence of bullying on mental health is gendered in that girls reported a higher frequency of bullying victimisation than boys (Eyuboglu et al., 2021; Noret et al., 2020).

Cyberbullying is online victimization that often includes online sexual harassment (e.g., sending unwanted sexual content or asking someone to do something sexual). Although there are similarities between cyberbullying and face-to-face bullying, there are significant differences primarily in terms of cyberbullying's virtual geography and anonymity, which means that its invasion of personal space can be more extreme and harmful than that of face-to-face bullying. Cyberbullying has the potential to intrude into spaces previously thought of as safe and personal, such as the private sphere of family and home (Patchin & Hinduja, 2006; Slonje & Smith, 2008). A growing body of evidence suggests that cyberbullying can adversely influence young people's mental health and wellbeing (Kowalski & Limber, 2013; Kwan et al., 2020), and is strongly associated with depression and low self-esteem (Hellfeldt et al., 2020; Ybarra et al., 2006), suicidal thoughts (Hinduja & Patchin, 2010), and poor peer interactions, stress, loneliness and low life satisfaction (Kwan et al., 2020). Hellfeldt et al. found that, of young people aged 10-13, those who were both victims and perpetrators of cyberbullying reported the highest rates of depression and anxiety. The effects of cyberbullying tended to be gendered, affecting females disproportionally, both as victims and as perpetrators, which may partly explain the disproportionate presentation of mental ill health in girls and young women (Kelly et al., 2018).

Interpersonal discrimination refers to behaviours and actions of one group's members that are intended to have a harmful effect on another group's members (Pincus, 1996). Interpersonal discrimination in the form of racism, sexism/gender related, ageism, and physical appearance has been found to relate to young people's mental health and wellbeing (e.g., Lewis et al., 2015; Pascoe & Smart Richman, 2009; Vargas et al., 2020). Although previous research tended to focus on evaluating a single type of discrimination, primarily racism (Pascoe & Smart Richman, 2009), a growing number of studies have examined multiple types of discrimination and their relation to mental health and well-being (e.g., Benner et al., 2018; Polanco-Roman et al., 2019; Vargas et al., 2020) although very few during Covid-19. In a meta-analytic study, Benner et al. found that racial discrimination had a strong association with adolescent depression and small to moderate associations

with psychological distress, low self-esteem, and risky health behaviors (2018). Polanco-Roman et al. (2019) found that the experience of frequent racial/ethnic discrimination was associated with an increased risk of traumatic stress and depression, and indirectly, an increased risk of suicidal ideation, particularly in young women, irrespective of the individual's race or ethnicity. Vargas et al. showed that experiencing multiple types of discrimination was associated with a greater risk of depression (2020). Gender-based discrimination has been found to relate to mental ill health, along with racism and heterosexism, predicting depression and suicidality (Price-Feeney et al., 2020). There remain substantial gaps in our understanding about the impact of different types of discrimination on mental health and wellbeing during Covid-19 (Haft & Zhou, 2021) and at sensitive developmental periods, such as mid to late adolescence.

A better understanding of the role of social support and interpersonal violence in adolescent mental health and wellbeing is timely, especially in light of recent initiatives led by the Maternal, Newborn & Child Health and the World Health Organisation (WHO) to develop a consensus framework for defining and measuring adolescent well-being along physical health, social networks and connectedness, safety and a supportive environment and agency and resilience in terms of self-esteem and equitable opportunities in life to flourish (Ross et al., 2020). Gender and ethnicity are central to these domains. Research has shown that girls and young women are more likely than boys and young men to display psychological distress, anxiety, and depression pre and during Covid-19 (e.g., Y. Hu, 2020; Patalay & Fitzsimons, 2020; Stroud & Gutman, 2021). Also, young people from minority racial-ethnic backgrounds reported more Covid-19-related worries, stress, depression, and poorer overall wellbeing than their white peers (e.g., Hargrove et al., 2020; Stinson et al., 2021), although, longitudinally, mental health and wellbeing showed a similar pattern across racial/ethnic groups, with depressive symptoms increasing through adolescence and again in late adulthood (Hargrove et al., 2020). Associations between racial/ethnic discrimination and mental ill health have highlighted dynamic inequalities not only during adolescence but also across the life span, as well as heterogeneity in trajectories of poor mental health within and between racial/ethnic-gender groups (Stinson et al., 2021).

Clearly, the pandemic affected young people's mental health and wellbeing differently based on their gender, ethnicity, access to various forms of social capital, and exposure to interpersonal violence and discrimination (e.g., Cullen et al., 2024; Hartas, 2024; Heshmati et al., 2021). Although there is a growing body of research on mental health and wellbeing during Covid-19 highlighting young people's vulnerabilities, there are still gaps in the nature of social support and types of interpersonal violence and their role in shaping 16- year-olds' wellbeing especially during health crises. As the paradigm of multidimensional wellbeing, embedded in young people's social structures, gains traction (Ross et al., 2020), understanding these social factors and their relationship to teenage wellbeing needs a better contextualisation. To fill this gap, this study examined young people's lived experiences during the pandemic by considering social support from friends and family, feelings of safety and connectedness within their communities, and interpersonal violence manifested in the form of cyberbullying and discrimination.

This study aimed to examine associations between mental health and wellbeing in school year 11 students (16-year-olds) and i) gender and ethnicity; ii) closeness with friends and availability of social support in their families and communities; iii) general physical health; and iv) cyberbullying, face-to-face bullying, and interpersonal discrimination. Mental ill health was understood in terms of high psychological distress and likely generalized anxiety and major depression. Subjective wellbeing was defined as self-esteem and life satisfaction. Subjective wellbeing involves young people's self-evaluation of feelings to better understand subjective emotional states along life satisfaction, i.e., a person's overall judgment about their life at a particular point in time; the presence of positive feelings or affect, i.e., feeling happiness and joy from moment to moment; and the absence of negative feelings or affect, i.e., feeling angry or depressed) (Diener, 1984; Stiglitz et al., 2019). These constructs reflect different aspects of wellbeing: Satisfaction with life involves an evaluative judgment of one's life over time. Conversely, positive and negative emotions result from evaluating people's hedonic experiences as they happen (Stiglitz et al., 2019). Self-esteem relies on evaluative judgements about people's life over time.

The research question that guided the study was as follows:

What is the unique and cumulative contribution of demographics (gender, ethnicity); social support (from family, friends and community); general physical health; and interpersonal violence (bullying, online harassment, discrimination) to 16-year olds' mental health, life satisfaction, and self-esteem during Covid-19?

It was hypothesized that girls and minority ethnic groups are more likely than boys and white young people to report higher psychological distress and likely depression and anxiety. Positive associations were hypothesized between mental health, life satisfaction, and self-esteem and i) general physical health, and ii) social support; and negative associations between mental health, life satisfaction and self-esteem and i) bullying, ii) online harassment, and iii) discrimination.

Methodology

The study utilized secondary data from the first wave of the COVID-19 Social Mobility and Opportunities (COSMO) Study to examine mental health and wellbeing in young people. COSMO examined, through high-quality data, how the Covid-19 pandemic affected socio-economic inequalities in young people's life chances and their mental health and well-being (Adali et al., 2022). A representative sample of young people in England who were in school year 11 (age 16) in the 2020/2021 academic year were invited to take part in the survey. A sample of more than 13,000 young people was recruited in the

first wave (54% females). Young people from disadvantaged backgrounds (those eligible for Free School Meals, 8%, a proxy of poverty, at any time in the last six years) and those from the six main minority ethnic groups (Indian, Pakistani, Bangladeshi, Black Caribbean, Black African and Mixed) were oversampled (40% were from minority ethnic groups) to counterbalance previous cohort studies whereby the majority of participants were White. The data collection was carried out between September 2021 and April 2022, predominantly online. The data used in this study came from the online youth questionnaire, which included questions about different periods of the pandemic, covering the two major lockdowns that took place in the UK (Lockdown 1: from April to July 2020, and Lockdown 3: from January to March 2021) as well as the time in between when most schools were open (September to November 2020- lockdown 2 started in November through to Christmas 2020). Due to the manner of online data collection, young people without access to internet (albeit a relatively small number) were not included in the study. Also, being a cross-sectional study did not allow longitudinal comparisons to be made. Finally, although the percentage of missing data was very small, their distribution was examined to detect any patterns and was dealt with by replacing missing values with the mean or median of the corresponding column (mean/ median imputation).

In the COSMO dataset, measures of mental health (i.e., GHQ-12, PHQ-2, and GAD-2) were obtained from well-validated, self-reported screening questionnaires used in a nonclinical context. A strength of using these screening instruments was that they allow comparisons to be made with other cohort studies, including the COVID-19 Surveys conducted by CLS on the Millennium Cohort Study, Next Steps, 1970 British Cohort Study,1958 National Child Development Study, and MRC National Survey of Health and Development in the UK (Adali et al., 2022).

Four sets of measures were included in this study, namely physical and mental health and wellbeing; social support; interpersonal violence; and demographic information

Physical and Mental Health and Wellbeing

There were six measures of physical and mental health and well-being, namely the General Health Questionnaire (GHQ-12), the Patient Health Questionnaire (PHQ-2), the Generalized Anxiety Disorder (GAD-2), Rosenberg's self-esteem scale, and measures of general physical health and life satisfaction.

The General Health Questionnaire (GHQ-12) is a screening tool for likely mental ill health and measures general, non-psychotic, and minor psychiatric disorders and concentrates on the broader components of psychological health in terms of general levels of happiness, depression, and self-confidence. It contains 12 items (six positively and six negatively phrased) which are rated on a four-point scale (0, 1, 2, 3) to indicate whether symptoms of mental ill health are present. The scores range from 0 to 36 (a higher score indicates likely mental ill health), (M=26.4 and SD=7.9). The most used cut-offs are between 2 and 4 for the bimodal method and between 10 and 15 for the Likert scale (Anjara et al., 2020; Goldberg & Williams, 1988). The data showed that 43% of young people in this study reported likely high psychological distress. The Cronbach's a was .923, indicating strong internal consistency.

The Patient Health Questionnaire (PHQ-2) includes the first two items of the PHQ-9 and examines the frequency of depressed mood and anhedonia (Kroenke et al., 2003). Young people were asked whether they have been experiencing low mood (i.e., 'Little interest or pleasure in doing things'; 'Feeling down, depressed or hopeless') over the last 2 weeks, with the following response options: Not at all (0), Several days (1), More than half the days (2), and Nearly every day (3). Scores of 3 and above indicate a likely major depressive disorder (Kroenke et al., 2003). In this data, 33% of 16-year-olds reported likely major depressive disorder. The Cronbach's a was .888, indicating a strong internal consistency.

The Generalized Anxiety Disorder (GAD-2) is a brief initial screening tool (2 items) for generalized anxiety disorder. The GAD-2 was based on the GAD-7, which was developed by Kroenke et al. (2007). Young people were asked whether they have been bothered by problems (i.e., 'Feeling anxious, nervous or on edge'; 'Not being able to stop worrying') over the last 2 weeks, with the following response options: Not at all (0); Several days (1); More than half the days (2); and Nearly every day (3). Scores of 3 and above indicate likely generalized anxiety disorder. Specifically, 36% of young people in this study reported likely generalized anxiety disorder. The Cronbach's a was .815, indicating a strong internal consistency.

The short Rosenberg's self-esteem scale was used to measure self-esteem, with responses ranging from strongly agree to strongly disagree (Rosenberg, 1965). The original 10 item scale has 5 positively phrased and 5 negatively phrased questions. COSMO Wave 1 used 5 positively phrased questions only (i.e., 'On the whole, I am satisfied with myself'; 'I feel I have a number of good qualities'; 'I am able to do things as well as most other people'; 'I am a person of value; and I feel good about myself'), with scores ranging from strongly disagree=0 to strongly agree=3. The items were summed up to create a continuous variable with scores ranging from 0 to 15, M= 9.3 and SD=3.35 (the higher the score, the higher the self-esteem). The Cronbach's a was .904, indicating a strong internal consistency.

The Life satisfaction scale was used to measure respondents' evaluation of their life as a whole, utilizing one item only, with scale scores ranging from 0=not at all satisfied to 10= very satisfied (M=6.22 and SD=2.12). The scale was found to have good test-retest reliability (.84) (Diener, 1984).

General Health consisted of one self-rated item ('how would you rate your health?') with ratings being 'very good', 'good', 'fair', 'bad', and 'very bad'. Due to small cell sizes, the variable was recoded into three groups: good health (68%), fair health (26%), and poor health (6%).

These measures of physical and mental health and wellbeing were chosen to reflect evaluative judgment of one's life over time (i.e., life satisfaction), positive and negative emotions as they happen, and evaluative judgements about people's competencies and efficacy (such as self-esteem). They cover not only young people's affective states but also cognitive representations and evaluations of themselves.

Social Support

The People in My Life Questionnaire consisted of three items included from the 26-item Peers Attachment Scale, part of the People in My Life Questionnaire, which was based on the Inventory of Parent and Peer Attachment (IPPA) by Armsden and Greenberg (1987). Young people were asked about their relationship with their friends (i.e., 'My friends listen to what I have to say'; 'I can count on my friends to help me when I have a problem'; 'I share my thoughts and feelings with my friends') with ratings being 'Very true' (=1); 'Partly true' (=2);' Often true' (=3) and 'Always true' (=4). The answers were summed up and the scores ranged from 3 to 12, with M=8.7 and SD=2.3 (higher the score the higher the connection with friends). The Cronbach's a was .797, indicating a good internal consistency.

The Short Social Provisions Scale consisted of three items to examine young people's current relationships with friends, family and community members (i.e., 'I have family and friends who help me feel safe, secure and happy'; 'There is someone I trust whom I would turn to for advice if I were having problems'; 'There is no one I feel close to'). The three items were taken from the 10-item Social Provisions Scale (Cutrona & Russell, 1987) that measures the availability of social support. Responses were 'Very true' (=1), 'Partly true' (=2), to 'Not true at all' (=3), and the scores ranged from 3 to 9, M=4 and SD=1.34 (the higher the score the lower the social support available from family, friends and the community). The Cronbach's a was .441, indicating a modest internal consistency. These scales captured social support from friends and family.

Interpersonal Violence: Bullying, Cyberbullying and Sexual Harassment, and Discrimination

Cyberbullying and sexual harassment: This examined whether young people experienced harassment online in the last four weeks in terms of: 'nasty old hurtful messages sent to me or posted about me'; 'sent someone or posted a nasty or hurtful message'; 'someone sent or posted online intimate images of me without my consent'; 'saw / received sexual images or messages from someone I do not know in real life'; 'saw / received sexual images or messages from someone I do know in real life'; and 'saw content which upsets me for example sexual, violent, self-harm'. The responses were 'Yes' (=1) and 'No' (=0). The responses were summed up, creating a continuous variable with M=.25 and SD=6.6 (the higher the score, the fewer the instances of online harassment). The Cronbach's a was .548, indicating good internal consistency. This scale included different manifestations of cyberbullying instead of a single type of cyberbullying, capturing young people's diverse online experiences.

Bullying: 16-year-olds were asked if they have been a victim of face-to-face bullying at school or college, with 24% answering 'Yes' and 76% 'No'.

Interpersonal discrimination: Young people were asked whether they were insulted, called names, threatened, or shouted at for any of the following reasons: sex/gender identity; age; skin colour or ethnicity; sex orientation; health or disability; nationality; religion; language or accent; education or income levels; and dress or appearance. The responses were Yes (=1) and No (=0) and were summed up with M= .6 and SD= 1.19. It is of interest to note that 17% of young people were discriminated against due to appearance. The Cronbach's a was .683, indicating good internal consistency. In contrast to studies that tend to include one type of discrimination (mostly racial), this measure captures diverse forms of discrimination, as reflected in the Equality Act.

Demographic Information

Ethnicity: This variable was recoded into 2 groups to avoid small group cell sizes: White (60%) and BAME (Black, Asian, and minority ethnic) (40%).

Gender: There were 46% males and 54% females in the sample.

Data Analytic Plan

Three binary logistic regressions (Table 1) took place to examine the unique and cumulative contributions of demographics, social support from friends, family, and community, and interpersonal violence in the form of bullying, including cyberbullying, and discrimination to 16-year-olds' mental health as measured by GHQ-12 (high v. not high psychological distress), PHQ-2 (likely v. not likely major depressive disorder) and GAD-2 (likely v. not likely generalized anxiety disorder). The dichotomized categories were based on the cut-off points provided for each scale. Two linear

regression analyses (Table 2) also took place to examine the contribution of the same set of predictors to young people's self-esteem and life satisfaction. All regression models were established using entry method with all covariates being entered into models at the same time. Diagnostic tests were run and assumptions (normality of residuals, multicollinearity, whether the data fit the models) were met. With the binary logistic regression analyses, the odds ratio for the predictor variables were examined. The odds ratio for a particular variable is defined as e^b whereas e is the natural log or base number (2.718) of natural logarithms and b is the logit co-efficient estimate of predictors.

Results

Regression Assumptions Testing and Effect Sizes

Regarding the two multiple linear regressions, the adjusted *R* square for Rosenberg's self-esteem was .283 which means that over 28% of the variance in self-esteem was explained by the regression model. The ANOVA F (10) = 1479.54, p<.000 was statistically significant, and thus, the model fits the data well. Likewise, for life satisfaction, the adjusted *R* square was .337 which suggests that the regression model accounts for around 34% of the variance in life satisfaction measures. Also, because F= 306.319, p <.000 was significant, the model predicted life satisfaction well.

Regarding the binary logistic regressions, the Negelkerke was used as an effect size measure for all three models, indicating the portion of the variance in the outcome variable explained by the predictor variables cumulatively. The Nagelkerke pseudo r^2 for GHQ-12, PHQ-2 and GAD-2 were .36, .33, and .27, respectively, indicating that around 36%, 33% and 27% of the variance in GHQ, PHQ and GAD during the pandemic was accounted for in the full models. To check whether the model fits the data and how well the model predicts the outcome variables, the model chi-square statistic, which measures the difference between the model (with predictors) and the baseline model (without predictors) was examined for all three logistic regression models. Specifically, the omnibus tests for GHQ, X^2 (15) = 78.85, p <.000, PHQ, X^2 (15) =110.06, p <.000 and GAD, X^2 (15) =79.03, p <.000, were statistically significant, pointing to a good model fit. Also, the Hosmer Lemeshow tests for the GHQ, PHQ and GAD models (X^2 (8)=5.57, p <.31; X^2 (8)=4.5, p <.80; and X^2 (8)=8.32, p <.39) were not statistically significant which means that the observed probabilities matched the predicted probabilities.

Finally, to check the assumption of multicollinearity (correlations between predictor variables) in the logistic models, the VIF valued (variance inflation factor) were calculated and ranged between 1.3- 1.6 (below 10) across the three logistic regression models, indicating that the assumption of multicollinearity was met. Likewise, multicollinearity was checked in the two linear regression models, and the VIF values raged between 1.4-1.7 and thus, the assumption was met.

Table 1. Odds Ratio for PHQ-2, GHQ-12 and GAD-2

	PHQ-2	GHQ-12	GAD-2
Demographic factors			
Sex	2.20**	2.640**	2.828**
Ethnicity	.73**	.929**	.721**
Physical Health			
General Health (good v fair)	2.54**	2.673**	2.345**
General Health (good v poor)	4.51**	7.779**	4.382**
Social support:			
Friends	.95**	.929*	.956
Family and community	1.53**	1.503**	1.327
Interpersonal violence:			
Online Harassment	1.35**	1.32**	1.22**
Bullying	1.61**	1.50**	1.66**
Discrimination	1.20**	1.41**	1.19**

**p<.01; **p<.001*

Table 2. Standardised Beta for Rosenberg's Self-Esteem and Life Satisfaction

	Rosenberg's self-Esteem Beta (SE)	Life Satisfaction Beta (SE)
Demographic		
Sex	-.137 (.079)**	-.105 (.04)**
Ethnicity	.105 (.093)*	.020 (.05)*
Physical Health		
General Health	-.236 (.075)**	-.268 (.04)**
Social support:		
Friends	.130 (.019)**	.115 (.011)**
Family and community	-.209 (.035)**	-.279 (.019)**

Table 2. Continued

	Rosenberg's self-Esteem Beta (SE)	Life Satisfaction Beta (SE)
Interpersonal violence:		
Online Harassment	-.031 (.063)**	-.059 (.035)**
Bullying	.062 (.097)**	.066 (.053)*
Discrimination	-.112 (.038)**	-.095 (.021)**

**p<.01; **p<.001*

Gender, Ethnicity, Physical and Mental Health

As seen in Table 1, compared to males, females were over two times more likely to experience high psychological distress, over two and a half times elevated symptoms of depression, and nearly three times elevated symptoms of generalised anxiety. Compared to white young people, minority ethnic 16-year-olds were 27%, 8%, and 28%, respectively, less likely to report high psychological distress, and elevated symptoms of depression and generalised anxiety. Consistently, significant associations between demographics and i) self-esteem and ii) life satisfaction were found. Specifically, gender (β=-.13 for self-esteem and β=-.10 for life satisfaction) and ethnicity (β=.10 for self-esteem and β=.02 for life satisfaction) were significant predictors (Table 2). For girls, the predicted scores for self-esteem and life satisfaction would be .13 and .10, respectively, lower than that for boys, indicating lower self-esteem and life satisfaction. For minority ethnic young people, the predicted scores for self-esteem and life satisfaction would be .10 and .02, respectively, higher than that for their white peers, indicating higher self-esteem and life satisfaction.

General physical health emerged as a strong predictor. Compared to young people with good general health, 16-year-olds who reported fair general health were around two and a half times more likely to report higher psychological distress and elevated symptoms of depression and generalised anxiety. Young people who reported poor general health were around four and a half times more likely to report high psychological distress and generalised anxiety and over seven and a half times more likely to report depression symptoms (Table 1). Likewise, general health was a significant predictor for self-esteem (β=-.23) and life satisfaction (β=-.26) (Table 2). For young people with poor physical health, the predicted scores for self-esteem and life satisfaction would be .23 and .26, respectively, lower than that for people with reported good health, indicating lower self-esteem and life satisfaction.

Social Support, Interpersonal Violence, and Mental Health

For young people with access to friends, there was a 5% decrease in the likelihood of reporting high psychological distress and anxiety and 8% decrease in reporting depression. Consistently, for young people with friends the predicted scores for self-esteem (β=.13) and life satisfaction (β=.11) were .13 and .11 higher than those for young people without friends (Table 2). Young people with reduced family and community support were around 1.5 times more likely to report higher psychological distress, depression and anxiety (Table 1). Similarly, for young people with family (β=.20) and community support (β=.28), the predicted scores were .20 and .28 higher than those for people without family and community support, indicating higher self-esteem and life satisfaction (Table 2).

Young people who experienced cyberbullying, including online sexual harassment, were around 30% more likely to report higher psychological distress, depression and anxiety. Those who experienced face to face bullying and interpersonal discrimination were over 60% and 20%, respectively, more likely to report higher psychological distress and anxiety, and 50% and 40%, respectively, more likely to report depression (Table 1). Consistently, as seen in Table 2, online harassment (β=-.03 and β=-.06); face to face bullying (β=.06 and β=.07); and discrimination (β=-.11 and β=-.10) made significant contributions to young people's self-esteem and life satisfaction, respectively. Specifically, for young people who experienced online harassment, the predicted scores were .03 and .06 lower for self-esteem and life satisfaction. Also, compared to 16-year-olds who did not report bullying, those who did reported lower self-esteem and life satisfaction. Finally, for young people who reported being discriminated against, the predicted scores were .11 and .10 lower than those who did not report discrimination, indicating lower self-esteem and life satisfaction.

Taken together, gender, general health, and family and community support emerged as relatively strong predictors of 16-year olds' psychological distress and likely depression and anxiety and low self-esteem and life satisfaction.

Discussion

The pandemic brought drastic changes in human interaction and social connectedness, and in mental and physical health of young people in the UK and globally. Increased rates of depression, anxiety, post-traumatic stress disorder, and psychological distress in adolescents and young adults have been identified worldwide as a direct result of the pandemic (e.g., Newlove-Delgado et al., 2022; Racine et al., 2021; Stroud & Gutman, 2021; Xiong et al., 2020). The goal of this study was to examine associations between social support, interpersonal violence, gender and ethnicity, and young people's mental health and wellbeing during Covid-19. The findings showed that poor general physical health, limited social support

particularly from family and community, face to face bullying and cyberbullying and interpersonal discrimination associated strongly with high psychological distress, and elevated symptoms of depression and anxiety, and with low self-esteem and life satisfaction in 16-year-olds during the pandemic.

Adolescent Girls, BAME and Mental Health and Wellbeing

Consistently to previous research (Y. Hu, 2020; Patalay & Fitzsimons, 2020), girls and young women were far more likely than boys and young men to report mental ill health, particularly elevated generalised anxiety, and low self-esteem and life satisfaction. Reflecting previous studies (e.g., Pierce et al., 2020), young women had poorer mental health at the start of the pandemic, and the present findings show that increased reports of mental ill health continued during the pandemic. BAME (Black, Asian, and minority ethnic) students were found to be less likely than their white counterparts to report psychological distress, depression and anxiety symptoms, and lower self-esteem and life satisfaction during the pandemic. This finding contrasts with previous research showing that, across races and ethnicities, the experience of racial/ethnic discrimination has been associated with an increased risk of traumatic stress and depression, leading indirectly to an increased risk of suicidal ideation, particularly in women (Polanco-Roman et al., 2019).

The study's findings on ethnicity are partly at odds with those in a study by Pierce et al. that found no significant differences in young adult mental health across ethnic groups at the start of the pandemic but warned that ethnic differences may become evident as the pandemic continues (Pierce et al., 2020). Although BAME families during the pandemic have had more Covid-19 worries, financial stress, and poorer wellbeing than white families (Stinson et al., 2021), BAME 16-year-olds were less likely than their white counterparts to report reduced mental health and wellbeing possibly because they were 'buffered' by a collective culture of support evident in their communities (Cohen & Willis, 1985). For many minority / immigrant communities, informal social support through family and friends is considered a fundamental component of their cultural values of connectedness and has been found to have a positive impact on their resilience (Behnke et al., 2008).

Adolescent Physical and Mental Health and Wellbeing

Much current research has shown increased symptoms of anxiety and psychological distress in young people with poor physical health and long-term health conditions and disability (e.g., Barker et al., 2019; Cobham et al., 2020; Mazza et al., 2020). Across different medical conditions studied, Cobham et al. found a higher prevalence of anxiety disorder in under-18's with chronic medical conditions compared to the general population (2020). Consistently, the results from this study indicated that 16-year-olds who reported poor general physical health were far more likely to report high psychological distress and likely depression and generalised anxiety. Several explanations have been offered to understand this possibly bi-directional association: high levels of depression and anxiety- associated characteristics may be due to a compromised immunity caused by poor health exacerbated by Covid-19. For example, cancer and other long-term health conditions predicted anxiety and depression, an effect mediated by worry, "depressive brooding" and shame (Hughes et al., 2021). Conversely, young people with mental ill health often neglect their physical health due to marginalisation and limited access to financial and cultural resources, services, and systems of social support, especially during the pandemic and the restrictions that ensued (Jongsma et al., 2023).

Social Support during Covid-19: Friends, Family, and Community

A serious drawback of the social distancing measures during Covid-19 was social isolation from families and friends (Gupta & Dhamija, 2020; Heshmati et al., 2021). Social distancing and uncertainty about the pandemic end time have exacerbated depression and anxiety among young people at a time of their life when social interactions and friendships are crucial for their social and emotional development and their capacity to navigate the social world (Fox Tran, 2022; Xiao, 2020). Aligned with these studies, 16-year-olds with reduced social support were more likely to report higher psychological distress, and elevated symptoms of depression and anxiety. The findings showed social support to exert a differential effect on young people's mental ill health, self-esteem and life satisfaction. Although support from friends was found to make a modest contribution, social support from families and communities emerged as a strong predictor of mental health, self-esteem, and life satisfaction. Social support from friends had a limited predictive value for 16-year olds' mental health and wellbeing during the pandemic whereas family support emerged as a strong predictor, functioning as a protective mechanism against the effects of stressful events.

Face to face social support has been found to be more effective than online social and informational support in lessening depressive symptoms (Longest & Kang, 2022) which means that during the pandemic, online interactions with friends were not as impactful as face-to-face interactions with family members. This is consistent with a study by Heshmati et al. conducted during the first Covid-19 lockdown which showed that depression was correlated with low social support from family with no significant associations found between social support from friends and depression or anxiety. The authors argued that reliance on family support is linked to lockdown laws in which people were permitted to see family but not friends (Heshmati et al., 2021). Consistently, pre-pandemic, an Australian longitudinal study by Possel et al. found that lack of parental support was the most important predictor of depressive symptoms in adolescents (2018).

Parent-child interactions, as formulated in Coleman's (1988) concept of intrafamily social capital, have important implications for children's well-being. Coleman distinguished between social capital between the family and the surrounding community and social capital within the family. Intrafamily social capital can be understood as strong parent-child relations that depend on parental attention and emotional warmth. Israel and Beaulieu (2004) broadened intrafamily social capital by distinguishing explicitly between structural and process-related social interactions within the family with structural referring to the structures of family relations (for example the frequence of parent-child interactions) and process-related emphasizing the qualitative aspect of social interactions, for example, parent- child communication and emotional connectedness. The strong associations between family support and child wellbeing in this study highlighted the role intrafamily capital plays in supporting adolescent mental health and wellbeing.

Interpersonal Violence and Mental Health and Wellbeing

Interpersonal violence in the form of bullying, including cyberbullying, has a deleterious effect on young people's mental health and wellbeing especially during health crises (e.g., Arslan et al., 2021; Khan et al., 2020; Lobe et al., 2020; Merenkova et al., 2021; Myklestad & Straiton, 2021). During the pandemic, Myklestad and Straiton demonstrated adolescents' risk of self-harm to be 6 times higher for bully-victims, 5 times higher for victims, and 3 times higher for perpetrators (2021). Likewise, a cross-sectional study in Turkey (Arslan et al., 2021) found that adolescents who were victims or perpetrators of school bullying reported significantly more emotional and behavioural problems and fewer positive psychological orientations manifested as gratitude, optimism, self-efficacy, empathy, and self-awareness, which tend to mediate the link between school bullying and mental ill health.

Furthermore, growing evidence suggests that the psychological health of young people has worsened due to cyberbullying during the pandemic (Khan et al., 2020; Lobe et al., 2020; Merenkova et al., 2021). Consistently, in the present study, young people who experienced cyberbullying, including online sexual harassment, were more likely to report higher psychological distress, depression, and anxiety. Due to restrictions in outdoor activities during the pandemic, technology usage increased during the first lockdown, during which children's screentime and the risk of cyberbullying also increased (T. Hu et al., 2021; Limone & Toto, 2021). T. Hu et al. reported a 16% increase in smartphone use during the first Covid-19 lockdown which related to an increase in depression, anxiety, and poor health (Mohan et al., 2021) as well as to a rise in conflict between children and their parents who attempted to moderate screen use (Liu et al., 2020). It is possible that, as screen time increased, young people's inhibitory control decreased, paving the way for online inappropriate behaviour (Merenkova et al., 2021). Similar findings emerged from the analyses of the Millenium Cohort Study pre pandemic, whereby victims of online harassment reported an increased risk of depression and difficulties with sleep, body image, and self-esteem (Hartas, 2021; Kelly et al., 2018) and an increased risk of self-harm and suicidality (Hellfeldt et al., 2020; John et al., 2018) although to a lesser extent for the perpetrators. However, as these studies were largely cross-sectional, it is difficult to establish whether poor mental health is a consequence of or a precursor to cyberbullying.

Consistently with previous studies (e.g., Polanco-Roman et al., 2019; Ransing et al., 2020), interpersonal discrimination in this study was found to relate to 16-year-olds' higher psychological distress, likely depression and anxiety, and low self-esteem and life satisfaction. Certain groups of people across the world experienced significant discrimination during the pandemic, a consequence of multiple socio-ecological drivers such as fear, misinformation, and facilitators, namely racism, gender-related discrimination and poverty (Ransing et al., 2020) with significant implications for their mental health. Pre-pandemic, Polanco-Roman et al. found an indirect relation between racial/ethnic discrimination and suicidal ideation across gender and racial/ethnic groups that was mediated by traumatic stress and depressive symptoms (2019). They suggested that cumulative experiences of racial/ethnic discrimination may underpin suicide-related risk in young people via increases in psychiatric symptomology (i.e., traumatic stress and depressive symptoms), particularly in young women. And, as Haft and Zhou (2021) noted, the link between perceived discrimination and anxiety and psychological distress might be stronger during Covid-19, which limited young people's access to protective factors such as social support. Clearly, the lived experiences of young people during the pandemic were not uniform. Inequality worsened during the pandemic and exacerbated vulnerabilities related to lack of social support and interpersonal violence and discrimination.

Conclusion

Mental ill health among young people is on the rise globally according to evidence produced jointly by UNICEF and the World Health Organization (WHO). The findings from this study delineated the contribution of physical health, social support and interpersonal violence, gender and ethnicity to 16-year olds' mental health and wellbeing, highlighting their multidimensional nature. As such, interventions to improve adolescent mental health and well-being will require a multisectoral approach to ensure that the social determinants of mental health are accounted for. In a similar vein, the assessment of adolescent well-being will require multidimensional indicators that capture young people's lived experience as it is embedded in their social contexts. The strong associations between discrimination and mental ill health suggests that young people's discrimination experiences due to racial/ethnic, gender, body image, etc should be accounted for as a potential source of psychological distress in the assessment, diagnosis, and treatment of psychological distress, self-harm and suicidal thoughts, especially among young women. The strong associations between physical and mental health highlighted their interlinked nature, pointing to the need to approach mental and physical health as an entity.

Recommendations

The findings from this study strengthened the existence of a relational wellbeing in adolescence, the idea that wellbeing is heavily influenced by relationships and emerges "...through the dynamic interplay of personal, societal, and environmental structures and processes." (White, 2017, p. 122). A relational approach to wellbeing offers credence to promoting socially supportive coping strategies to lessen adolescent mental health challenges. Social support has multiple dimensions including friendships and positive peer interactions, emotional and instrumental support from families and communities which are likely to help build resilience to stress. This has policy implications especially as the multiagency Global Action for Measurement of Adolescent Health initiative led by WHO has repeatedly emphasised the role of social determinants in adolescent well-being (WHO, 2019). Reshaping the determinants of mental health often requires action beyond the health sector, which makes effective promotion and prevention a multisectoral venture to account for young people's social ecologies. The health sector in collaboration with educational institutions and family and community support services can contribute significantly to supporting young people's mental health by embedding prevention efforts within structures and processes in families and communities and by advocating, initiating and facilitating access to financial resources and social capital to enable adolescents to navigate the social world at a crucial stage of their life. School ethos and leadership need to be geared towards supporting mental health in young people through creating a culture of openness and respect. One example of schools supporting families during health crises is to offer safe spaces where young people can access information about mental health, advice about preventative strategies and accessing interventions (such as CBT or counselling), preferably, within their communities. At a societal level, tackling interpersonal violence and discrimination through policies such as the Equality Act and cybersecurity is crucial, considering the impact of these social factors on young people's mental health. For this to happen clear policies are needed especially with regard to holding social media platforms that promote toxic content into account.

Limitations

The measures of mental health and wellbeing and social support and interpersonal violence were self-reported. Although they offered the means for individual young people to talk about their mental health and subjective wellbeing outside the context of a clinical diagnosis, they are subjective and thus prone to bias. Also, data were collected between September 2021 and April 2022 which means that the participants were asked to rely on their recollections of the events and experiences occurred during the lockdowns. The GHQ-12, PHQ-2 and GAD-2 scales are screening devices that cannot provide a definitive clinical diagnosis although they indicate the likelihood of psychological distress, depression and anxiety. Additionally, baseline measurements for the GHQ-12, PHQ-2 and GAD-2 scales were not obtained, which limits conclusions pertaining to the longitudinal impact of Covid-19 on mental health. Furthermore, the construction of some of the measures and sample constraints may have limited this study. Specifically, three measures, namely, bullying, life satisfaction and general physical health, relied on one item only. Also, the measures for ethnicity (White and BAME) and interpersonal discrimination were not fine-tuned; small group sizes and did not allow us to capture nuances due to ethnic diversity and different types of discrimination in young people's mental health and wellbeing.

In considering the strong associations between reported poor physical health and likely anxiety, depression and higher psychological distress, future research should examine the prevalence of anxiety and depression in children and adolescents with a broad range of life-limiting conditions and disability rather than focusing on physical health in general. Likewise, future research should focus on examining different types of discrimination in relation to adolescent mental health. Finally, it is important to note that the associations examined in this study were not causal. The relationships between mental ill health, self-esteem and life satisfaction and perceived social support, bullying and discrimination might suggest the adverse influence of interpersonal violence and limited social support on mental health, self- esteem and life satisfaction. Conversely, pre-existing mental ill health may pose obstacles to accessing social support from family and friends, due to stigma and marginalisation, and make young people vulnerable to interpersonal violence.

Ethics Statement

The study design and the tools used for COSMO were approved by the [BLINDED] Research Ethics Committee at the Institute of Education (IOE). Prior to participating in the study, all participants provided written informed consent, indicating their voluntary agreement to participate.

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Generative AI statement

As the authors of this work, we didn't use any AI tools.

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