

DISORDERED EATING ATTITUDES, DEPRESSIVE SYMPTOMATOLOGY AND ALCOHOL CONSUMPTION IN YOUNG ATHLETES

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ABSTRACT

Purpose: The aim of the study was to investigate the prevalence of disordered eating behaviours and attitudes in Slovenian male and female categorized athletes in relation to depressive symptoms and their alcohol consumption.

Methods: The sample included 198 categorized athletes between 18 and 20 years of age. The Eating Attitude Test, the Center for Epidemiologic Studies Depression Scale, and the Alcohol Use Disorders Identification Test were used to measure disordered eating behaviours, level of depression, and alcohol use, respectively.

Results: Significant differences were found between female and male athletes, with female athletes reporting higher levels of disordered eating attitudes and depressive symptoms. 13.90% of athletes reported clinically significant eating disorder symptoms, 40% reported clinically significant depressive symptoms, and 10.50% reported risky alcohol use. Results also showed that athletes with higher eating disorder attitudes had higher depressive levels.

Conclusion: These findings have important practical value and point to the importance of building a professional team trained to recognize mental health problems in athletes in order to provide appropriate help.

Keywords: disordered eating behaviours, athletes, depression, alcohol consumption

MOTENO PREHRANJEVANJE IN ODNOS, DEPRESIVNA SIMPTOMATIKA IN VNOS ALKOHOLA PRI MLADIH ŠPORTNIKIH

IZVLEČEK

Namen: Namen raziskave je bil ugotoviti razširjenost motenega prehranjevalnega vedenja med slovenskimi kategoriziranimi športniki in športnicami v povezavi s simptomi depresivnosti in uživanjem alkohola.

Metode: V vzorec je bilo vključenih 198 kategoriziranih športnikov, starih od 18 do 20 let. Za merjenje motenega prehranjevanja, stopnje depresivnosti in uživanja alkohola so bili uporabljeni test odnosa do prehranjevanja, lestvica depresivnosti Centra za epidemiološke študije in test identifikacije motenj uživanja alkohola.

Rezultati: Ugotovljene so bile pomembne razlike med športnicami in športniki, pri čemer so športnice poročale o višjih stopnjah motenega prehranjevanja in depresivnih simptomov. 13,90 % športnikov je poročalo o klinično pomembnih simptomih motenj hranjenja, 40 % o klinično pomembnih depresivnih simptomih in 10,50 % o tveganem uživanju alkohola. Rezultati so tudi pokazali, da so imeli športniki z več simptomi motenega prehranjevalnega vedenja višje ravni depresivnosti.

Zaključek: Te ugotovitve imajo pomembno praktično vrednost in potrjujejo pomembnost oblikovanja strokovnega tima, usposobljenega za prepoznavanje duševnih težav in nudenja ustrezne pomoči športnikom.

Ključne besede: moteno prehranjevalno vedenje, športniki, depresivnost, uživanje alkohola

INTRODUCTION

In sports that emphasize leanness or a low body weight, especially in endurance, aesthetic and weight class sports, athletes adhere to rigid diets and strenuous exercise regimens to optimize performance. This may increase the risk of disordered eating behaviours and vulnerability to develop ED (Knapp, Aerni, & Anderson, 2014). EDs are serious mental disorders, characterized by an excessive preoccupation with food, body weight and figure, and are classified in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013), or in the International Classification of Diseases (ICD-10; World Health Organization, 2018). To meet clinical criteria, the conditions must impair physical health or psychosocial functioning. The DSM-5 categorizes EDs into several specific types, including: Anorexia Nervosa (AN), Bulimia Nervosa (BN), Binge Eating Disorder (BED), Unspecified Feeding or Eating Disorder (UFED) etc. The aetiology of EDs is multifactorial, being influenced by genetic, environmental and psychological factors but also factors specific to the practicing of sport (Sanchis, Balmaseda, & Hidalgo, 2022). These factors are particularly present in some disciplines involving endurance, those that have weight categories, or where low weight is a competitive advantage and aesthetics are important (Sanchis et al., 2022; Joy, Kussman, & Nattiv, 2016; McDonald, Pritchard, & McGuire, 2019). Athletes face a unique set of ED risk factors related to sport participation, such as performance pressure, and injury (Bratland-Sanda & Sundgot-Borgen, 2013; Sundgot-Borgen & Torstveit, 2010).

In addition, teammates are also an important source of influence on athletes' eating attitudes and behaviours, and critical comments and body comparisons among teammates may promote disordered eating (Scott, Haycraft, & Plateau, 2019). This context might put athletes at risk for the development of pathological attitudes or behaviours, as seen in clinical ED. While research indicates an increase in ED point prevalence in the general population in recent years from 3.5% in 2000–2006 to 7.8% in 2013–2018 (Galmiche, Déchelotte, Lambert, & Tavolacci, 2019), the estimated prevalence of DE and/or EDs in athletes ranged from 0% to 19% in men and 6% to 45% in women (Reardon et al., 2019; Kristjánsdóttir, Sigurðardóttir, Jónsdóttir, Þorsteinsdóttir, & Saavedra, 2019; Ackerman et al., 2019), with higher prevalence compared to the general population (Martinsen & Sundgot-Borgen, 2013). Identifying eating disorders in this population is complicated (Chapa et al., 2018) and the nature of the relationship between athletic involvement and eating problems is still unclear.

However, athletes suffer from a number of negative effects on their health and performance related to their disordered eating behaviours (Joy et al., 2016), which can negatively affect the well-being of the athlete. More specifically, several findings showed a significant association between depression and eating disorders (Deepthi, Praveen, Chandrashekar-Rao, Vincent, & Kishore, 2014), as depression is one of the comorbid illnesses of EDs (Godart et al., 2015; McIntyre & Calabrese, 2019), and the relationship is interrelated and bi-directional (Villamizar, Dattilo, & Pozo,

2012). Depression is manifested by a constant feeling of sadness and lack of interest in pleasurable activities, lack of energy, changes in appetite or weight, disruptive sleep disorders, anxiety, lack of attention, feelings of guilt and self-harm or suicidal thoughts. Some studies showed that depression leads to progression of eating pathology (Villamisar et al., 2012; Jones, Buckner, & Miller, 2014); in addition, improper nutrition and severe fasting can create chemical imbalances that play a significant role in causing certain types of depression (Sathyanarayana, Asha, Ramesh, & Jagannatha, 2008). In a study assessing depression in collegiate athletes over a 3-year period (Wolanin, Hong, Marks, Panchoo, & Gross, 2016) results showed that 23.7% of athletes reported clinically relevant depressive symptoms, with 6.3% reporting moderate to severe depression, similar to non-athletes.

The relationship between EDs and alcohol consumption has also attracted considerable attention as it is well known that EDs often co-occur with substance use disorders (SUD) (Fouladi et al., 2015). It has also been suggested that depressive symptoms are an underlying factor for the relationship between the clinical variables and the comorbidity between alcohol use and EDs, such as bulimia nervosa (Vaz-Leal et al., 2015). When considering alcohol consumption in the population of athletes, most studies have found that participation in sports is positively associated with alcohol use, and recent meta-analyses showed that the prevalence for alcohol misuse ranged around 19% (Gouttebarga et al., 2019), while some studies report less susceptibility to problematic alcohol consumption (Purcell, Rice, Butterworth, & Clements, 2020).

The serious health consequences of disordered eating behaviours and the short- and long-term consequences that can impair athletic performance, as well as the conflicting findings in the literature on ED in sport, argue for the need to further investigate the prevalence of disordered behaviours, related symptoms in athletes and its associated risk factors. For these reasons, the aims of the current study were: to examine the prevalence of disordered eating behaviours and disordered attitudes in male and female categorized athletes and to examine the relationships between eating behaviours and psychological dimensions such as depression and behavioural dimensions such as alcohol use, and to assess the difference between groups based on these variables.

METHODS

Study design

This study is a descriptive, correlational study with a cross-sectional design based on self-reporting. We used a non-random, purposive sample. To participate in the study, we invited athletes who were categorized in the year of the implementation of the research plan according to the standards for categorization of athletes established by the Olympic Committee of Slovenia. The inclusion criteria for participation in the study were: the age of the athlete between 18 and 20 years and the categorization of the at-

hlete at the beginning of the study. The exclusion criteria were either lack of consent to participate in the study or failing to complete the questionnaires. The athletes were contacted through the coaches of their clubs and national teams, who invited them to participate. All subjects voluntarily chose to participate in the study without compensation.

Participants

The participants were 198 categorized Slovenian athletes (according to the Olympic Committee of Slovenia, 2018). There were 120 male and 95 female athletes who participated in both individual and group sports and were between 18 and 20 years old. The average age of the athletes was 18.34 years with a standard deviation of 0.48 years.

Instruments and measurements

The evaluation protocol consisted of three self-reported measures to assess symptoms of disordered eating, depression, and alcohol consumption. Informed consent was obtained from the authors for the use of the questionnaires. We followed the ethical principles of using and adapting the questionnaires into the Slovenian language and carried out the intended methodological procedures of translation and adaptation.

The 26-item Eating Attitudes Test (EAT-26) is a commonly used tool to assess eating disorder risk and symptoms and concerns characteristic of EDs (Garner & Garfinkel, 1979). It is one of the most widely used screening instruments in the field of eating disorders, in both clinical and epidemiological studies, to assess a range of behaviours and attitudes toward eating, weight, and abnormal eating habits and concerns about weight (Garner, Olmsted, Bohr, & Garfinkel, 1982). It consists of a self-administered questionnaire with 26 items. Each item is a 6-point Likert scale ranging from “never” to “always” and is a valid instrument for examining and assessing the risk of an eating disorder. Twenty-six of the items make up the following three subscales: Dieting (13 items) assesses inadequate food intake and obsession with weight loss; Bulimia and preoccupation (6 items) assesses excessive eating with loss of control (binge eating) with vomiting and various thoughts and preoccupations with food and eating; the oral control scale (7 items) assesses self-control in food intake and environmental pressure for weight loss. The cut-off point proposed in the original 1979 version is 20. Scores above 20 indicate the need for further assessment by a qualified professional. Low scores (below 20) may nevertheless indicate serious eating problems, as denial of symptoms can be a problem in eating disorders. In the present study, the Cronbach’s alpha coefficient was 0.82.

The Center for Epidemiologic Studies Depression Scale — CES-D (Radloff, 1977) was used to assess depression symptoms. This is a self-report assessment of symptoms associated with depression, such as restless sleep, loss of appetite, and loneliness. It contains 20 items rated on a 4-point scale with subscale scores ranging from 0 to 60,

with higher scores indicating a more severe symptom of depression. A total score of 16 or higher indicates clinically significant depression (Okun, Stein, Bauman, & Silver, 1996; Junge & Feddermann-Demont, 2016; Prinz, Dvorak & Junge, 2016). In this study, the Cronbach's alpha was 0.9.

The Alcohol Use Disorders Identification Test (AUDIT; Babor, Higgins-Biddle, Saunders, & Monteiro, 2001) was used to assess alcohol use. The AUDIT is a well-validated and reliable 10-item questionnaire developed by the World Health Organization (WHO) to identify individuals whose alcohol use has become hazardous or harmful. AUDIT -a total score of 8 and above has been shown to be a reliable indicator of hazardous alcohol-related behaviour. The AUDIT consists of three subscales that assess alcohol use (AUDIT-C; three items assessing frequency and quantity of alcohol use), symptoms of alcohol dependence (AUDIT-D; three items), and harmful consequences of alcohol use (AUDIT-H; four items assessing frequency of negative events). The subscale AUDIT-C is considered a sensitive indicator of alcohol use. In the present study, we use only the AUDIT total score ($\alpha = 0.81$) in the analyses.

Procedure

Data and contacts were obtained through the individual coaches and selectors of each national team and federation. Athletes who met the inclusion criteria received an email invitation to participate in the study with a detailed description of the research, goals, and objectives. The purpose of the study and procedures were explained in detail to all participants. The survey was completed electronically; the link was sent to participants' email addresses. This study was conducted in accordance with the guidelines of the Declaration of Helsinki. Ethical considerations such as anonymity, confidentiality, and voluntary participation were ensured in accordance with the Ethical Principles for Psychologists of the American Psychological Association. This study was approved by the National Medical Ethics Committee of Slovenia (KME, No. 0120-95/2018/6).

Statistical analysis

The data were edited in Microsoft Excel 2019 (Microsoft Corporation, Redmond, Washington, USA) and statistical analysis was conducted in IBM SPSS 20.0 (Statistical Package for Social Sciences Inc., Chicago, USA). Cronbach's alpha was calculated to assess internal consistency of the measurement instruments. Frequency distribution was calculated for descriptive variables, and averages and standard deviations were calculated for numerical variables. To determine the differences in studied symptoms between participants we used the Mann-Whitney U-test.

RESULTS

Descriptive statistics for the enrolled subjects (mean, standard deviation, skewness and kurtosis values) are presented in Table 1. The average score on the CES-D questionnaire was high, indicating possible more serious depressive symptoms. The average score on AUDIT and EAT-26 was relatively low. The results revealed that most of the data did not follow normal distribution, therefore non-parametric statistics were performed in further analysis. Moreover, correlational analysis with Spearman test was applied in order to explore the relations between the main variables. The eating attitude test (EAT-26) had a statistically significant positive correlation with depression, that is, as the scores in the subscales of depression increased, the attitude to eating worsened (Table 1).

Table 1: Descriptive statistics and correlations for study variables (n=198)

Variable	n	M	SD	Skewness	Kurtosis	1	2
1. EAT-26	180	9.05	8.88	1.95	5.24	-	
2. CES-D	198	15.59	9.83	0.99	0.87	0.44**	-
3. AUDIT	172	3.32	3.80	2.40	8.56	0.15*	-0.01

Note: * $p < .05$. ** $p < .01$. *** $p < .001$.

Next, we found that 25.3% of the female athletes demonstrated problematic eating attitudes ($EAT-26 > 20$), and report clinically significant eating disorder symptoms (Table 2). The authors of EAT-26 give a cut-off point of 20, which helps identify individuals with clinically (in)significant eating disorder symptoms, with good sensitivity and specificity and high internal consistency (Garner et al., 1982). A score of 20 or above on the EAT-26 test indicates that further clinical investigation is needed. As shown in Table 2, 13.9% of athletes report clinically significant symptoms of eating disorders.

Moreover, a score above 16 on the CES-D may indicate a high level of depressive symptomatology, e.g. clinical depression, with good sensitivity and specificity and high internal consistency (Lewinsohn, Seeley, Roberts, & Allen, 1997). In studies (Armstrong & Oomen-Early, 2009; Junge & Feddermann-Demont, 2016; Prinz et al., 2016), the cut-off value of 16 points is most frequently used, while some studies (Nixdorf, Frank, Hautzinger, & Beckmann, 2013; Nixdorf, Frank, & Beckmann 2016) used a more conservative score value of 22 points. In this study, both values were considered. Moreover, the proportions of young athletes exceeding the cut-off value of 16 points on the CES-D test was very high, i.e. 40.9%. The highest score, i.e. $CES-D \geq 22$, was observed in 25.2% of participants, which means that they very likely experience clinically significant depressive symptoms. In the results separated by gender, we can see

that 59.1% of women report experiencing clinically significant depressive symptoms, (CES-D \geq 16). The highest score, i.e. CES-D \geq 22, was reported by 38.6% of women. For men, 26.3% of respondents exceed 16 points, and 14.5% exceed 22 points or more.

The authors of the AUDIT test (Babor et al., 2001) give a cut-off point of 8, which helps to identify individuals with risky and harmful drinking patterns with good sensitivity and specificity and high internal consistency (Conigrave, Saunders, & Reznik, 1995). In this study 10.50% of athletes reported risky and harmful alcohol consumption and drinking patterns. The results, separated by gender, showed that 12.2% of men exceed AUDIT > 8, slightly less women, 8.1%.

Table 2: Results split across cut-off point relevant clinical categories

Variable/ total score	Male		Female		Total	
	N	%	N	%	N	%
EAT-26						
Low score	96	95.00	59	74.70	155	86.10
High score	5	5.00	20	25.30	25	13.90
CES-D						
Low score	81	73.70	36	40.90	117	59.10
High score	13	11.80	18	20.50	31	15.70
Severe score	16	14.50	34	38.60	50	25.20
AUDIT						
Low score	86	87.80	68	91.90	154	89.50
High score	12	12.20	6	8.10	18	10.50

In addition, the analysis revealed some statistically significant differences between the groups of male and female elite athletes, which are shown in Table 3. On EAT-26, female athletes scored statistically significantly higher than male athletes ($U = 5.012$, $p = 0.003$), indicating that female athletes are at higher risk for eating disorders. Females also achieve statistically significantly higher mean scores than males on the CES-D ($U = 6.707$, $p = 0.000$), thus reporting higher levels of depressive symptoms. On the AUDIT, there were no statistically significant differences in mean scores between genders ($U = 3.150$, $p = 0.135$).

Tabela 3: Comparison of male and female athletes on EAT-26, CES-D, and AUDIT questionnaires

	EAT-26			Diference	
	N	M	SD	U	p
Male	101	6.92	5.97	5.012	0.003*
Female	79	11.78	11.03		
	CES-D			Diference	
	N	M	SD	U	p
Male	110	12.58	7.80	6.707	0.000**
Female	88	19.36	10.80		
	AUDIT			Diference	
	N	M	SD	U	p
Male	98	3.47	4.37	3.150	0.135
Female	74	2.40	2.80		

DISCUSSION

The purpose of the current study was to examine the prevalence of disordered eating behaviours and attitudes in male and female categorized athletes and to examine the relationships between eating behaviours and psychological dimensions such as depression and behavioural dimensions such as alcohol use. The serious health consequences of eating disorders, depression, and alcohol abuse, as well as the short- and long-term consequences that can impair athletic performance, point to the need for further investigation of these risk factors in athletes.

We found a significantly increased prevalence of pathological attitudes or behaviours as seen in clinical eating disorders. As many as one quarter (25.30%) of young female athletes reported behaviours and attitudes related to food, weight, abnormal eating habits, and concerns about weight that indicate risk for an eating disorder, as well as symptoms and concerns characteristic of EDs. Among male athletes, this percentage is much lower at 5%. Lower scores may still be associated with severe eating disorder symptomatology, as symptom denial can be a major problem in eating disorders (Garner et al., 1982). Therefore, some authors use a cut-off point of 10 (Rosendahl, Bormann, Aschenbrenner, Aschenbrenner, & Strauss, 2009). These findings are consistent with the known fact that women are affected by ED to a greater extent than men (Keel & Forney, 2013; Kristjánsdóttir et al., 2019). Furthermore, reports of ED prevalence in sport worldwide vary by gender, sport, and level of competition from 0% to 19% in male athletes and 6% to 45% in female athletes (Bratland-Sanda & Sundgot-Borgen,

2013). However, the question of whether athletes really represent a subgroup at risk of developing an eating disorder remains controversial.

Moreover, the results of this study showed a significant association between increased attitudes toward EDs and depression symptoms. These results are consistent with those of other studies showing that depression is significantly associated with eating disorder (Deepthi et al., 2014; Manaf, Saravanan, & Zuhrah, 2016; McIntyre, & Calabrese, 2019; Wolanin et al., 2016). 40% of all participating athletes exceed the cut-off point of 16 on the CES-D. Of particular note is the percentage of 59.10% of young categorized athletes who have clinically significant depressive symptoms. Even when using a more conservative cut-off point of 22, the number is still extremely high, with 38% of young athletes exceeding the above cut-off point. Of concern is the fact that more than half of the young female athletes and slightly more than a quarter of the young male athletes showed clinically significant symptoms of depression. Compared to other studies, our athletes showed clinically significant symptoms of depression (CES-D \geq 16) more frequently than athletes in other studies (Armstrong & Oomen-Early, 2009; Junge & Feddermann-Demont, 2016; Nixdorf et al., 2013; Prinz et al., 2016). In the aforementioned studies, the percentage of athletes exceeding 16 points on the CES-D ranges from 12% to 20%, and the mean scores range from 8 to 12 points. The results also showed some differences in reported depression symptoms related to gender. Similar to other studies, our female athletes were more likely to report significant depressive symptoms and achieved higher mean scores than men. In a well-designed study (Wolanin et al., 2016) using the CES-D scale to assess depression in 465 athletes over a 3-year period, it was found that females had the highest rates of depression on the CES-D scale. They also found that 23.7% of athletes reported clinically relevant depressive symptoms, with 6.3% reporting moderate to severe depression, similar to non-athletes (Wolanin et al., 2016).

The scores obtained in our study on the AUDIT questionnaire were not high. The average score for the participants was 3.01. However, it should be noted that still 10.50% of the participants obtained a score higher than 8 points on AUDIT, among them 12.20% of male athletes and 8.10% of female athletes. The percentages may not seem high, but great caution must be taken when interpreting them, as the issue of excessive alcohol consumption, harmful patterns, and alcohol dependence is very complex and sensitive. If we consider the three facts, first that participants do not usually report actual amounts and that we can usually add one point to each score (Babor et al., 2001); second, that alcohol has different effects depending on age and gender, so that the cut-off point for women and adolescents is often recommended at 7 rather than 8, leaving the determination of the cut-off point to judgment even by national and cultural standards; and third, that any time when young people drink alcohol is a risky drinking pattern (Sorko & Boben, 2014). Based on what has been written we can assume that the observed average scores are not particularly low. However, considering the low age of the athletes in our sample, the results are concerning. Importantly, four participants reported a value higher than 17 points. However, this is a value that may already indicate alcohol dependence syndrome.

Different authors (Brenner & Swanik, 2007; Diehl, Thiel, Zipfel, Mayer, & Schneider, 2014; Dunn, Thomas, Swift, & Burns, 2011; Dunn & Thomas, 2012; Du Preez et al., 2017; Lakasing & Mirza, 2009; Lisha & Sussman, 2010; Lorente, Souville, Griffet, & Grélot, 2004; O'Brien, Ali, Cotter, O'Shea, & Stannard, 2007; Peretti-Watel et al., 2003) indicate a positive association between sport participation and alcohol consumption, and that alcohol consumption among athletes is often risky and can lead to dependence. Based on our results we cannot conclude that there is a positive association between sport participation and alcohol consumption.

Regarding the difference between our population and the general population of 18–20-year-old young adults, it should be noted that comparison is difficult because diagnostic and screening methods are different. Globally, it is estimated that 12–50% of college students have at least one diagnostic criterion for one or more mental disorders (Bruffaerts et al., 2018). Studies conducted on different samples of college students have found a moderate to high prevalence of depression in this population (Al Bahhawi et al., 2018, Ramón-Arбуés et al., 2020). In the study conducted with 1210 participants in 194 cities in China using online questionnaires, 69.7% of participants were found to have normal depression, 13.8% had mild depression, 12.2% had moderate depression, and 4.3% had severe or extreme depression (Wang et al., 2020). Another recent study found that of the participants, 47% had minimal depression symptoms and 5% had severe depression symptoms (Ustun, 2021). In our study, the response rate (exceeding the cut-off value) for depressive symptoms was very high, 40.90%. In a study of Hong Kong college students using AUDIT ($n = 345$), 35.4% scored 8–15 points and 7.8% scored 16–19 points, and 0.9% scored 20 or more points (Chow, Ling Poon, Lui, Chan, & Lam, 2021). An Australian study reported an average AUDIT score of first-year college students of 10.79 (Corney & du Plessis, 2022), compared with our result, i.e. 3.01. Worldwide, many epidemiological studies have been conducted on ED with different prevalence rates. In India, among 1600 students aged 15–25 years, 10.6% of the total population had high EAT -26 scores (Nivedita, Sreenivasa, Rao, & Malini, 2018). The prevalence scores from our study (13.90% with high score in EAT-26) are higher than this report. Another study (Syed et al., 2018) conducted on 250 adolescent college students in Pakistan found that 29.2% of young girls had EAT-26 scores of 20 or higher.

It should be emphasized that it is not necessarily the case that elite sport and its demands are factors that directly cause the occurrence and frequency of symptoms of certain mental health problems (Perko, 2021). Sport, for example, can act as a positive factor that alleviates the unpleasant symptoms of mental disorders, and as such is only a training ground where latent or pre-existing problems can manifest themselves. Of course, to confirm this assumption, a long-term study would have to be conducted.

CONCLUSION

The findings of the present study suggest that the percentage of young athletes presenting clinically significant symptoms of eating disorders, depression, and risky alcohol consumption is high. Male and female athletes reported clinically significant symptoms of depression in 40.90%, clinically significant symptoms of eating disorders in 13.90%, and risky and harmful alcohol abuse in 10.50%. It is important to treat and recognize the symptoms and build a professional team trained in recognizing mental problems in athletes in order to provide adequate help.

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