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A comparative study of self-compassion and corona disease anxiety in adolescents receiving and not receiving COVID-19 vaccine

Mohammad Sajad Heydari

Master of Educational Psychology, Allameh Tabatabai University, Tehran, Iran

Kamran Shivandi

Assistant Professor, Faculty of Psychology and Educational Sciences, Allameh Tabatabaei University, Tehran, Iran

Corresponding author email: sheivandi@atu.ac.ir

Morteza Hassanzadeh

PhD student in Educational Psychology, Allameh Tabatabai University, Tehran, Iran

Zohreh Dortaj

Medical Student, Iran University of Medical Sciences, Tehran, Iran

Abstract---Introduction: The prevalence of COVID-19 has negative psychological consequences on adolescents. The current study aims to compare self-compassion and corona anxiety in adolescents receiving and not receiving Covid-19 vaccine. Methods: Based on the purpose of the research, a causal-comparative method was used. The study population included all male high school students in Kermanshah in 2021-2022, of which 384 students were selected as research sample using multi-step cluster sampling. The self-compassion questionnaire (Neff, 2003) and the anxiety of Corona questionnaire (Alipour et al, 2019) were used to collect data. Results: The results of data analysis using independent t-test showed that there is a significant difference between the two groups in terms of self-compassion and corona anxiety ($p < 0.01$). Moreover, the results of independent t-test showed that there is a significant difference between the two groups for components of self-friendliness, common humanity, mindfulness and psychological symptoms of corona anxiety and physical symptoms of corona anxiety ($p < 0.01$). Generally, the results showed that vaccinated individuals had significantly more self-compassion, self-friendliness, shared humanity, and mindfulness, and less corona anxiety and physical and psychological symptoms ($p < 0.01$). Conclusion: based on findings, it seems that improving self-

compassion and increasing awareness about reducing coronary anxiety after receiving the vaccine, encourages unvaccinated adolescents to receive the vaccine.

Keywords---COVID-19 vaccine, self-compassion, corona anxiety, adolescents.

Introduction

COVID-19 is a new type of corona virus diseases which is known as acute respiratory syndrome of corona virus (Alghamdi, A., et. al., 2021; Siyal, F. J., et. al., 2020; Baig, B. M., et. al., 2021). It has caused million people to die and has caused various problems for human societies. Although non-medical interventions like social distancing and putting mask has been effective in reducing the disease in short-term, vaccination is still considered as the most important and sustainable strategy to control the pandemic (Valck et al, 2022) and various studies have shown its effectiveness (Zheng et al, 2022). However, with regard to increased negative reports on vaccines (Liao et al, 2022) and concerns on immunity and rapid production of vaccines (Valck et al, 2022), a considerable percent of societies is still doubtful on vaccination. This is so important that World Health Organization has placed doubt on vaccination among 10 most important threats for world's health (World Health Organization, 2019).

Studies conducted to compare the intention to vaccinate among different age groups, show significant difference in terms of intention among adults, such that adolescents have on average 10-20 lower intention to vaccinate and this intention has a direct relationship with the age (Snehota et al, 2021; Liu, Ma, & Guo, 2022; Salimi et al, 2020). Gender, age, education, and cognitive, behavioral, and emotional characteristics can be referred among the most important factors affecting adolescents' decision to vaccinate (Nilsson et al, 2021; Liu et al, 2022). Self-compassion is among cognitive characteristics which can be effective. During corona crisis, experts recommend awareness, self-compassion, and being active (Peteet et al, 2020). Self-compassion includes self-friendliness against self-judgement, understanding negative experiences as a part of bigger human experience instead of isolation, and mindfulness of painful thoughts and emotions instead of sympathy for or neglecting them (Neff, 2003). People who have high self-compassion show less reaction to negative events than people who have low self-compassion; have higher positive emotion and better mental health; and report higher life satisfaction (Allan & Leary, 2010). Self-compassion is both an adaptive excitement regulation strategy and an endurance factor (Finlay Jones, 2017; Trompetter et al, 2017). Self-compassion is associated with reduced mental harm in adolescents (Marsh, Chan, & Macbeth, 2017). Most researches has reported self-compassion as a strong predictor of confronting behaviors for COVID-19 (such as Sugianto, Ann, & Sutanto, 2021 and Mohammadpour et al, 2020). Therefore, it seems that vaccination group has more self-compassion than non-vaccination group.

Corona anxiety is one of psychological consequences of corona pandemic. Various researches has supported increased children and adolescents' anxiety during COVID-19 pandemic (Briggs & Katy, 2020; Xie et al, 2020; Qi et al, 2020; Kasavandi, Amirian, & Pirzadeh Nouri, 2021). Corona anxiety is a type of anxiety which makes fear and anxiety of COVID-19 in cognitive terms and causes bodily stress, losing appetite, and sleep disorder in physical terms which this type of anxiety forms more due to cognitive ambiguity and lack of awareness about the disease (Alipour, Qadami, & Abdellahzadeh, 2019). Corona anxiety decreases sled quality and life quality (Barone, Ngongo, & Menna Barreto, 2020). Various studies also show the relationship between corona anxiety and vaccination. Researches show reduced corona anxiety and mental problems among vaccinated people (Karayurek, Cebi, Gulses, & Ayna, 2021; Perez-Arce et al, 2021). Increasing awareness in this regard can result in more intention to vaccination.

Despite significant advances in vaccine development, we still face with lack of intention to vaccinate among a big part of society, especially adolescents (Baqeri Lankarani & Khayamzadeh, 2021). With regard to positive role of vaccines in controlling COVID-19 outbreak chain, it seems that targeted interventions of media and executive organs in people decision to receive vaccine and reduce their doubt are necessary (Abdullahi, Kagina, Ndze, Hussey, & Wiysonge, 2020). In this regard, comparing people receiving and not receiving vaccine can provide useful information to better understand the characteristics of persons which finally results in more efficiency of interventions. Study population of current research includes male adolescent senior high-school students. During corona pandemic, basic social changes and problems in daily routines of adolescents and events like school shut-down, isolation in the home and societies, canceled social events, and missing important critical points (such as graduation and social events of school) has made their growth and life vulnerable (Ferguson et al, 2021). Since internal research on examining personal characteristics of adolescent receiving and not receiving vaccine is rare, current study becomes more important. With regard to above discussion and based on previous researches, it seems that there is a difference between persons receiving and not receiving vaccine in terms of self-compassion and corona anxiety. Current study aims to compare self-compassion and corona anxiety and their components among adolescents receiving and not receiving COVID-19 vaccine.

Research Methodology

Current study is practical in terms of purpose and is casual-comparative in terms of data collection and analysis. Current study aims to compare self-compassion and corona anxiety among adolescents receiving and not receiving COVID-19 vaccine. The study population included all male high school students in Kermanshah in 2021-2022, of which 384 students were selected as research sample using multi-step cluster sampling. The students answered a question about receiving and not receiving vaccine and following questionnaire were used to measure corona anxiety and self-compassion.

Corona Anxiety Questionnaire (Alipour et al, 2019) which has 18 items and 2 components of mental and physical symptoms which has been produced and validated to measure corona anxiety in Iran. Mental symptoms are measured by

questions 1-9 and physical symptoms are measured by questions 10-19. This questionnaire has a 4-point Likert scale (0=never, 1=sometimes, 2=mostly, 3=always). Alipour et al (2019) reported desirable validity for this questionnaire. Cronbach's alpha was 0.879 for mental symptoms sub-component, 0.861 for physical symptoms sub-component, and 0.919 for questionnaire. Cronbach's alpha was used to determine reliability in current research which was 0.95 for questionnaire in general, 0.87 for mental symptoms sub-component, and 0.84 for physical symptoms sub-component.

Self-compassion Questionnaire (Neff, 2003) which includes self-friendliness, shared humanity, and mindfulness sub-components. This questionnaire has a 5-point Likert scale (from 1=almost never to 5=almost ever). Questions 1, 2, 4, 6, 8, 11, 13, 16, 18, 21, 24, and 25 are scored reversely. Neff (2003) obtained re-test reliability of 0.93 and reported Cronbach's alpha of 0.92. Reliability of this questionnaire was 0.85 in general, 0.84 for self-friendliness, 0.82 for shared humanity, and 0.70 for mindfulness as measured by Cronbach's alpha.

Findings

Among respondents, 143 (37.2%) were in 14-15 age range and 241 (62.8) were 16 and more. Based on education level, 161 (41.9%) were at grade ten, 136 (35.4%) were at grade eleven, and 87 (22.7%) were at grade twelve.

Table 1. Descriptive statistics of research variables

Group	Variable	Number	mean	SD	z	p
Vaccinated	Self-compassion	336	74.3	8.07	0.193	0.177
	Corona anxiety	336	28.8	11.5	0.177	0.536
Not-vaccinated	Self-compassion	48	68.7	11.4	0.225	0.415
	Corona anxiety	48	34.8	14.8	0.138	0.124

According to table 1, distribution of self-compassion and corona anxiety variables is normal. Based on z-statistic, Kolmogorov-Smirnov test of vaccinated and not-vaccinated groups is not significant. Thus, distribution of variables is normal in both groups.

Moreover, mean and SD of vaccinated group is 28.8 and 11.5 for corona anxiety and is 74.3 and 8.07 for self-compassion. Mean and SD of not-vaccinated group is 34.8 and 14.8 for corona anxiety and is 68.7 and 11.4 for self-compassion. In other words, mean of vaccinated group is lower for corona anxiety and is higher for self-compassion compared to not-vaccinated group which reveals that vaccinated students had lower corona anxiety. Moreover, their self-compassion is higher (table 1).

Table 2. Results of independent t-test for comparing corona anxiety and self-compassion between two groups

Variable	Group	Number	mean	SD	mean difference	Degree of freedom	p
Self-	Vaccinated	336	74.3	8.07	5.68	382	0.001

compassion	Not-vaccinated	336	68.7	11.4			
Corona anxiety	Vaccinated	48	28.8	11.5	-5.93	382	0.001
	Not-vaccinated	48	34.8	14.8			

In order to examine the difference between vaccinated and not-vaccinated groups. Independent t-test was used. Results revealed that there is a significant difference between two groups in terms of self-compassion ($p = 0.001$) and corona anxiety ($p = 0.001$) (table 2).

Table 2 shows that mean of self-compassion for vaccinated group (74.3) is significantly more than not-vaccinated group (68.7). Thus, vaccinated group has a higher self-compassion than not-vaccinated group. Therefore, second hypothesis of study is confirmed. These findings show that there is a significant difference between two groups in terms of self-compassion.

Moreover, mean of corona anxiety for vaccinated group (28.8) is significantly lower than not-vaccinated group (34.8). Thus, vaccinated group has a lower corona anxiety than not-vaccinated group. Therefore, first hypothesis of study that there is difference between two groups in terms of corona anxiety is confirmed.

Table 3. Results of independent t-test for components of corona anxiety and self-compassion for groups.

Variables	Components	Group	mean	SD	mean difference	Degree of freedom	p
Self-compassion	Mindfulness	Vaccinated	34.4	6.9	5.04	382	0.000
		Not-vaccinated	29.3	5.4			
	Shared humanity	Vaccinated	26.5	2.6	4.79	382	0.004
		Not-vaccinated	21.7	3.8			
	Self-friendliness	Vaccinated	26.3	2.9	4.19	382	0.002
		Not-vaccinated	22.1	4.2			
Corona anxiety	Mental symptoms	Vaccinated	16.2	6.6	-2.82	382	0.008
		Not-vaccinated	19.08	8.7			
	Physical symptoms	Vaccinated	12.1	5.3	-2.57	382	0.004
		Not-vaccinated	14.7	7.8			

Based on table 3, independent t-test is significant for mental and physical symptoms of corona anxiety, self-friendliness, shared humanity, and mindfulness ($p < 0.001$). This shows that there is a significant difference between groups for these components.

Table 3 shows that mean of mental symptoms for vaccinated group (16.2) is significantly lower than not-vaccinated group (19.08), and mean of physical symptoms for vaccinated group (12.1) is significantly lower than not-vaccinated group (14.7). Therefore, third hypothesis of study that there is a significant difference between two groups in terms of corona anxiety components is confirmed. It can be said that mean of mental and physical symptoms is different for vaccinated group and not-vaccinated group and vaccinated group has lower mental and physical symptoms of corona anxiety than not-vaccinated group.

Moreover, mean of self-friendliness for vaccinated group (34.4) is significantly more than not-vaccinated group (29.3), mean of shared humanity for vaccinated group (36.5) is significantly more than not-vaccinated group (21.7), and mean of mindfulness for vaccinated group (26.3) is significantly more than not-vaccinated group (22.1). Based on these findings, fourth hypothesis of study that there is difference among components of self-compassion between two groups is confirmed. It can be said that mean of self-friendliness, shared humanity, and mindfulness is different between two groups and vaccinated group has more self-friendliness, shared humanity, and mindfulness than not-vaccinated group.

Discussion and Conclusions

Current study aims to compare corona anxiety and self-compassion between adolescent receiving and not receiving COVID-19 vaccine. Research findings showed significant differences between mean total scores and mean scores of components of corona anxiety and self-compassion. Thus, all research hypotheses are confirmed.

Research findings revealed high level of self-compassion and its components in vaccinated group. This is consistent with Sugianto et al (2021) and Mohammadpour et al (2020). That is vaccination as the most important action against COVID-19 is accompanied with high levels of self-compassion. It seems that persons who show higher self-compassion have different behaviors in cognitive, behavioral, and emotional domains. Self-friendliness can take more positive attention and emotions and puts personal needs such as health at the priority of perceived needs. Moreover, with regard to various negative environmental stimuli which have been made for people during COVID-19 pandemic, understanding negative experiences can make people to face life realities and makes the ground for using problem-oriented strategies instead of excitement-oriented strategies (Sohrabi, Jamian, & Pourasadi, 2020). Finally, mindfulness for thoughts and emotions can provide more cognitive resources for controlling situations. Generally, this means that self-compassion persons probably pay more attention to their health, better understand critical conditions, and select vaccination as a solution and prefer it to neglecting negative stimuli and concerns.

Research findings also revealed lower corona anxiety in general and for its components in vaccinated group. This is consistent with Nilsson et al (2021) and Bendau (2021). The role of comparative actions to reduce corona anxiety for COVID-19 has been confirmed in longitudinal studies (such as Valck et al, 2022). Thus, it seems that vaccination as the most important action is the cause of

reduced anxiety. Moreover, studies examined reason of doubt for vaccination, referred to immunity concerns and vaccine rapid development concerns (Valck et al, 2022). This means that person who have doubt for vaccination are persistently tolerating high amount of concerns which can result in increased anxiety level and emergence of mental and physical symptoms. Moreover, it can be expected that persons who overcome their doubt and decide to vaccinate become free of these concerns and disease chance is reduced for them. Reduced disease chance as a very important cognitive component can decrease excitement which in turn decreases mental and physical symptoms.

Due to using self-report tools, results may be accompanied with bias. Moreover, because current study was done among high-school students in Kermanshah, external validity may decrease by generalizing result into other societies. Longitudinal research is recommended to better examine the relationship of vaccination with mentioned components. Current study obtained information about personal characteristics of adolescents receiving and not receiving vaccine which can be useful for related authorities. Thus, results of current research can be useful for managers and decision-makers of Ministry of Health and Ministry of Education for targeted interventions for adolescents' decision to vaccination. Executive plans and media programs are recommended to improve components of self-compassion for adolescents and to transfer experiences of vaccinated persons. Finally, we would like to thank Education Office of Kermanshah and all participants.

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