



# IJRASET

International Journal For Research in  
Applied Science and Engineering Technology



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# INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

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**Volume: 8      Issue: VI      Month of publication: June 2020**

**DOI: <http://doi.org/10.22214/ijraset.2020.6134>**

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# Suicidal Ideation in Relationship to Stress, Anxiety and Depression among University Students

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**Abstract:** To explore the relationship among suicidal ideation, stress, anxiety and depression in university students a cross section design was used. A total of 531 (male = 203, female = 328) undergraduate students participated in this study their age range was 18 to 22 years. Adult Suicidal ideation Questionnaire (ASIQ) and Depression, Anxiety and Stress Scale (DASS-21) along with sociodemographic Performa were used to collect the necessary data. To analyse the collected data, descriptive statistics and Pearson correlation were applied using statistical package for social sciences (SPSS) version 21. The results indicated that there is interrelationship among stress, anxiety, depression and suicidal ideation. It can be concluded that level of suicidal ideation would be decreased significantly by addressing stress, anxiety and depression.

**Keywords:** Suicidal ideation, Stress, Anxiety, Depression, Afghanistan

## I. INTRODUCTION

Suicide is unpleasant phenomenon that exists in all human societies and creates a variety of issues and disturbs the normal and healthy life of individuals. It is found to be the third cause of deaths between 15 to 24 years worldwide (Habil, 2013). University students traditionally fall within this age group, and are especially at risk for suicide due to stressful life conditions (Ritze & Ohio, 2018). Suicide has a process. The first and one of the most important step of suicide is suicidal ideation (Franklin et al., 2017). Suicidal ideation is a continuum of thoughts ranging from mild to severe concerning death, which include thoughts and feelings about death, hurting one's self, or the "planning, conduct and outcome" of one's own suicide (Reynolds, 1991). The number of suicidal ideators is seems to be quite high. As per Borges, Angst, Nock, Ruscio & Kessler (2008) there are 140 million annual suicide ideators worldwide. Suicidal thoughts are multidimensional and complex problem (Han, McKeon & Gfroerer, 2014). Suicidal ideation alone may lead to serious suicidal behaviours (Bonner & Rich, 1988). It can result injury, loss liberty, hospitalization, financial burden on society and is a strong predictor of suicide death (Nock et al., 2008). Prevalence of suicidal ideation is a distressing phenomenon in university students (Pereira & Cardoso, 2015). There are many researches that shows that suicidal thoughts are prevalent among university students (Eisenberg, Gollust, Golberstein & Hefner, 2007; Fridner, 2009; Eskin et al., 2011; Garlow et al., 2008). Different factors such as that depressive symptoms, low social support, affective dysregulation, alcohol use disorders, and father-child conflict (Arria, O'Grady, Caldeira, Vincent, Wilcox & Wish, 2009) relationship problems, academic problems and financial problems (Stephenson et al., 2006) contribute to suicidal ideation among university students. Mood disorders are most frequently associated with suicide and suicide ideation and discussed as risk factors for the presence of suicidality (Chioqueta & Stiles, 2003). Many studies have looked to association between stress and suicidal ideation and they identified stress as a risk factor to suicidal ideation (Choh, 2009; Ahmad, Cheong, Ibrahim & Rosman, 2014). For example, Kim, Yang & Park (2015) explored the effect of life stress of university students on the suicidal ideation and that there was a significant correlation among life stress, suicidal ideation, and mental health. Similarly Shaheen & Jahan (2017) investigated associations between stress, social support and suicidal ideation. They found that there is significant positive correlation between adolescents stress and suicide ideation and significant negative correlation between perceived social support and suicide ideation. In addition to stress, many studies identified anxiety as risk factor for suicidal ideation (Engin, Gurkan, Dulgerler & Arabaci, 2009; Izadinia et al., 2010; Bashardoost & Ashoori, 2016). Suicidal ideation seems to be closely related with mood disorders as well (Valtonen et al., 2005). Evans, Hawton & Rodham (2004) linked depression as one of the factors causing suicidality in students. Medoff's study (2007) showed that depression had a strong link with suicidal behaviours in students with and without learning disabilities. Choh (2009) studied the relationship of stress, depression and suicidal ideation in Nursing Students in B city of Korea and found that depression was positively related to suicidal ideation. Galán, Ríos-Santos, Polo, Rios-Carrasco & ullón (2014) explored the relationships between burnout, depression and suicidal ideation in dental students. Their results revealed that there is a significant relationship between depression and suicidal ideation but found no association between burnout and suicidal ideation.

Compared to the researchers done in other countries, there is extremely lack of information on suicidal ideation, stress, anxiety and depression among university students in Afghanistan. This is due to four decades of war and conflict, lack professional researchers and lack facilities and lack of access to other countries researches. According to Garlow et al., (2008) suicidal ideation has increased among university students. Therefore undergraduate students considered to be the at-risk population. Hence, it is important to study this phenomenon from various angles in order to have better and effective intervention plans. This study aimed to explore the relationship among the relationship among suicidal ideation, stress, anxiety and depression among university students in Afghanistan. Researches on suicidal ideation, stress, anxiety and depression can guide mental health experts, related authorities and professionals on how to overcome these problems.

## II. METHOD

### A. Design

In the present study descriptive cross-sectional survey design was used, because it was appropriate for answering research questions.

### B. Participants

All regular undergraduate university students who were enrolled only in similar departments of Kabul University and Shaeed Prof. Rabbani Education University were the target population of the current study. The total population of this study consisted of 9107 students and they belonged to different departments and batches of an undergraduate regular program of 2019 academic year. To determine the sample size of the participants Krejcie & Morgan (1970) formula was used.

$$S = \frac{X^2 NP(1 - P)}{d^2 (N - 1) + X^2 P (1 - P)}$$

Where: S= required sample size  $X^2$  = the table value of chi-square for 1 degree of freedom at the desired confidence level; N= the population size; P= the population proportion (assumed to be .50 since this would provide the maximum sample size); and d= the degree of accuracy expressed as proportion (.05). The formula showed that at least 368 individuals should be selected for the study. However to maximize confidence in generalizing the findings and to get a more accurate picture of the problem and reduce errors the researcher added 50% of the participants from the population to the already specified study sample by the mentioned formula and sample size became 552 participants (male = 208, female =344). To select representative universities, departments and students from different universities the multistage probability sampling technique was employed. At first, purposive sampling technique was used and two public universities, Moreover both universities had only 15 similar departments, therefore in the second stage, all 15 similar departments were selected for the study. At third stage, proportionate stratified random sampling was employed and students in each of the selected departments were selected proportionality into male and female categories. Furthermore, years of the study was also considered. Finally 552 questionnaires distributed to participants using simple random sampling techniques. The researcher could collect 531 properly filled questionnaires. The rest 21 questionnaires were discarded for incompleteness. Due to this, the study analysis was done based on the response of 531 study participants.

### C. Tools

- 1) *Adult Suicidal Ideation Questionnaire (ASIQ)*: This self-report instrument consist of 25 items and they are arranged according to severity level, though there some clustering of similar item subdomains. The items of this instrument are rated on a 7 point scale ranging from 0 (I never had this thought) to 6 (almost every day). ASIQ produces a score between 0-150 with higher scores indicating more numerous and/or more frequent suicidal thoughts. The total score in this scale can be obtained by summing up all responses from the items (Reynolds, 1991a). This widely used instrument possesses the satisfactory internal consistency reliability, test-retest reliability, good discriminant validity, and concurrent validity in clinical and nonclinical samples (Carris, Sheeber, & Howe, 1998; Osman et al., 1999; Reynolds, 1991a; Velting, 1999). ASIQ was translated and adopted by the researcher. Face and content validity of the translated version of ASIQ was obtained by Lawshe (1975) quantitative approach to content validity. A pilot study was conducted to check the reliability of the translated version of ASIQ. The reliability of the ASIQ was investigated using Cronbach's Coefficient Alpha (0.91).
- 2) *Depression, Anxiety and Stress Scale (DASS- 21)*: DASS 21 has 21 items that encompass 3 scales namely; depression, anxiety and depression. It is designed to measure the negative emotional states of depression, anxiety and stress with 7 items per scale (Henry & Crawford, 2005). The psychometric properties of the DASS-21 have been studied in different countries with good results. The Cronbach's alpha of anxiety scale ranging between 0.82 and 0.91 (Henry & Crawford, 2005; Wang et al., 2016). It

also le has convergent and discriminant validity that reported in several studies (Bados et al., 2005; Norton, 2007). The Persian translation and validation of DASS 21 is done by Asghari, Saed, Dibajnia in 2008. In the present study the Chronbach alpha for the entire DASS was 0.90 and for depression, anxiety and stress scales were 0.78, 0.78 and 0.76 respectively

3) *Data Analysis:* A descriptive analysis was done of the findings. SPSS 21 version was used to analyse the data. The findings were analysed through percentage and frequencies, to find out the correlation among suicidal ideation, stress, anxiety and depression Pearson Correlation was employed .

### III. RESULTS

A total of 531 students participated in this study of which 38.2% were male and 61.8% were female. The age range of respondents was 18 to 22 years old. As it can be confirmed from table 1, there was a positive correlation between suicidal ideation and stress,  $r = .751$ ,  $n = 531$ ,  $p = .000$ . Increases in score of suicidal ideation was correlated with increases score of stress.

Tabl 1 Corelation among suicidal ideation, stress, anxiety and depression

Variables	Mean	SD	Correlation coefficient		
			Stress	Anxiety	Depression
Stress	12.4878	11.36402			
Anxiety	8.4878	9.37386	.860**		
Depression	10.7250	9.01925	.789**	.830**	
Suicidal Ideation	19.9774	22.69953	.751**	.762**	.662**

The findings also revealed that relationship between suicidal ideation and anxiety are significant ( $p .000$ ). The relationship between the mentioned variables are positive and strong ( $r =.762$ ). This means that there is a significant relationship between suicidal ideation and anxiety.

The current study findings showed that there is a significant relationship between suicidal ideation and depression ( $P = 0.000$ ) and this relationship is strong and positive ( $r = .662$ ) which means the relationship between suicidal ideation and depression is strong, positive and statistically significant.

As it is shown in table 1, the relationship between stress and depression are significant ( $p = .000$ ). The relationship between the mentioned variables are positive and strong ( $r =.789$ ). This means that there is a significant relationship between stress and depression. The findings of present study also revealed that relationship between stress and anxiety are significant ( $p = .000$ ). The relationship between the mentioned variables are positive and strong ( $r =.860$ ). This means that there is a significant relationship between stress and anxiety. In addition, this study also found that there is a positive and significant correlation between anxiety and depression,  $r = .830$ ,  $n = 531$ ,  $p = .000$ . An increase in the score of anxiety was correlated with increases score of depression.

### IV. DISCUSSION

This study was designed to explore the relationship among suicidal ideation, stress, anxiety and depression in university students in Afghanistan. The results of Pearson coefficient correlation indicated that suicidal ideation was significantly and positively correlated with stress, anxiety and depression. Based on these results it can be said that students with high level of stress, depression and anxiety also shown high level of suicidal ideation. These results also indicated that stress, anxiety and depression are risk factors for developing suicidal ideation in university students. Or in other words we can say addressing stress, anxiety and depression will decrease the rate and risk of developing suicidal ideation. The findings of this study is in line with findings of Hyang-Suk (2009) on relationship of stress, depression and suicidal ideation in nursing students in B city of Korea. They found that there was a positive correlation between suicidal ideation and stress. Other researches also reported similar findings (Ahmad, Cheong, Ibrahim & Rosman, 2014; Kim, Yang & Park, 2015; Abdollahi, Talib, Yaacob & Ismail, 2015). Researches that explored the relationship between suicidal ideation and anxiety have also found that there is positive relationship between them (Bashardoost & Ashoori, 2016; Izadinia et al., 2010). Moreover studies have found that there is a positive relationship between suicidal ideation and depression (Chen, Kang & Lin, 2017; Mustaffa, Aziz, Mahmood & Shuib, 2014; Pervin & Ferdowshi, 2016).

Another finding of the current study is that stress is also positively and significantly correlated with depression and anxiety. In addition there was also a relationship between anxiety and depression. Findings of previous studies also support these findings. Parvez, Agrawal & K, (2018) conducted a study on anxiety, depression and stress among undergraduate students from Aligarh Muslim University, Aligarh, Uttar Pradesh. They found that there was a significant positive relationship between anxiety and depression; anxiety and stress; and depression and stress. Choi et al., (2015) found that depression was significantly correlated with anxiety.

## V. CONCLUSION

As per findings of this study it can be concluded that there is interrelationship among stress, anxiety, depression and suicidal ideation. In other words stress, anxiety and depression are the risk factors of suicidal ideation. Since there is an interrelationship among stress, anxiety depression and suicidal ideation, therefore it can be concluded that level of suicidal ideation would be decreased significantly by addressing stress, anxiety and depression. Therefore, it is suggested that future researches should focus on other factors that might be associated with suicidal ideation. This would help the mental health experts in making an effective and comprehensive intervention plan.

## REFERENCES

- [1] Abdollahi, A., Abu Talib, M., Yaacob, S. N., & Ismail, Z. (2015). The role of hardiness in decreasing stress and suicidal ideation in a sample of undergraduate students. *Journal of Humanistic Psychology*, 55(2), 202-222. <https://doi.org/10.1177/0022167814543952>
- [2] Ahmad, N., Cheong, S. M., Ibrahim, N., & Rosman, A. (2014). Suicidal ideation among Malaysian adolescents. *Asia Pacific Journal of Public Health*, 26(5\_suppl), 63S-69S. <https://doi.org/10.1177/1010539514540746>
- [3] Arria, A. M., O'Grady, K. E., Caldeira, K. M., Vincent, K. B., Wilcox, H. C., & Wish, E. D. (2009). Suicide ideation among college students: A multivariate analysis. {ABSTRACT}. *Archives of Suicide Research*, 13(3), 230-246. DOI: 10.1080/13811110903044351
- [4] Asghari, A., Saed, F., & Dibajnia, P. (2008). Psychometric properties of the Depression Anxiety Stress Scales-21 (DASS-21) in a non-clinical Iranian sample. *Int J psychol*, 2(2), 82-102.
- [5] Bados, A., Solanas, A., & Andrés, R. (2005). Psychometric properties of the Spanish version of depression, anxiety and stress scales (DASS). *Psicothema*, 17(4), 679-683.
- [6] Bashardoost, B. & Ashoori, N. (2016). Relationship between suicidal ideation, depression and anxiety among Iranian college students. *The social sciences*, 11(12): 3088-3094. DOI: 10.36478/sscience.2016.3088.3094
- [7] Bonner, R. L., & Rich, A. R. (1988). A prospective investigation of suicidal ideation in college students: A test of a model. *Suicide and Life-Threatening Behavior*, 18(3), 245-258. <https://doi.org/10.1111/j.1943-278X.1988.tb00160.x>
- [8] Borges, G., Angst, J., Nock, M. K., Ruscio, A. M., & Kessler, R. C. (2008). Risk factors for the incidence and persistence of suicide-related outcomes: a 10-year follow-up study using the National Comorbidity Surveys. *Journal of affective disorders*, 105(1-3), 25-33. <https://doi.org/10.1016/j.jad.2007.01.036>
- [9] Carris, M. J., Sheeber, L., & Howe, S. (1998). Family rigidity, adolescent problem-solving deficits, and suicidal ideation: A mediational model. *Journal of adolescence*, 21(4), 459-472
- [10] Chen, L., Wang, L., Qiu, X. H., Yang, X. X., Qiao, Z. X., Yang, Y. J., & Liang, Y. (2013). Depression among Chinese university students: prevalence and socio-demographic correlates. *PloS one*, 8(11). <https://doi.org/10.1371/annotation/e6648eb3-37d6-44d7-8052-979af14fa921>
- [11] Eisenberg, D., Gollust, S. E., Golberstein, E., & Hefner, J. L. (2007). Prevalence and correlates of depression, anxiety, and suicidality among university students. *American journal of orthopsychiatry*, {ABSTRACT}. 77(4), 534-542. <https://doi.org/10.1037/0002-9432.77.4.534>
- [12] Engin, E., Gurkan, A., Dulgerler, S., & Arabaci, L. B. (2009). University students' suicidal thoughts and influencing factors. *Journal of Psychiatric and Mental Health Nursing*, 16(4), 343-354. <https://doi.org/10.1111/j.1365-2850.2008.01377.x>
- [13] Eskin, M., Voracek, M., Stieger, S., & Altinyazar, V. (2011). A cross-cultural investigation of suicidal behavior and attitudes in Austrian and Turkish medical students. {Abstract}. *Social psychiatry and psychiatric epidemiology*, 46(9), 813-823. <https://doi.org/10.1007/s00127-010-0254-7>
- [14] Evans, E., Hawton, K., & Rodham, K. (2004). Factors associated with suicidal phenomena in adolescents: a systematic review of population-based studies. *Clinical psychology review*, 24(8), 957-979. <https://doi.org/10.1016/j.cpr.2004.04.005>
- [15] Franklin, J. C., Ribeiro, J. D., Fox, K. R., Bentley, K. H., Kleiman, E. M., Huang, X., ... & Nock, M. K. (2017). Risk factors for suicidal thoughts and behaviors: a meta-analysis of 50 years of research. *Psychological bulletin*, 143(2), 187-232. <https://doi.org/10.1037/bul0000084>.
- [16] Fridner, A., Belkic, K., Marini, M., Minucci, D., Pavan, L., & Schenck-Gustafsson, K. (2009). Survey on recent suicidal ideation among female university hospital physicians in Sweden and Italy (the HOUPE study): cross-sectional associations with work stressors. {ABSTRACT}. *Gender medicine*, 6(1), 314-328. <https://doi.org/10.1016/j.genm.2009.04.006>
- [17] Galán, F., Ríos-Santos, J. V., Polo, J., Ríos-Carrasco, B., & Bullón, P. (2014). Burnout, depression and suicidal ideation in dental students. *Medicina oral, patología oral y cirugía bucal*, 19(3), e206 – e211.
- [18] Garlow, S. J., Rosenberg, J., Moore, J. D., Haas, A. P., Koestner, B., Hendin, H., & Nemeroff, C. B. (2008). Depression, desperation, and suicidal ideation in college students: results from the American Foundation for Suicide Prevention College Screening Project at Emory University. {ABSTRACT}. *Depression and anxiety*, 25(6), 482-488. <https://doi.org/10.1002/da.20321>
- [19] Garlow, S. J., Rosenberg, J., Moore, J. D., Haas, A. P., Koestner, B., Hendin, H., & Nemeroff, C. B. (2008). Depression, desperation, and suicidal ideation in college students: Results from the American Foundation for Suicide Prevention College Screening Project at Emory University. *Depression and Anxiety*, 25, 482-488. doi:10.1002/da.20321
- [20] Habil, M. H. (2013). Suicide—It's an SOS! Retrieved from <http://www.psychiatry-malaysia.org/article.php?aid=504>

- [21] Han, B., McKeon, R., & Gfroerer, J. (2014). Suicidal ideation among community-dwelling adults in the United States. *American journal of public health, 104*(3), 488-497.
- [22] Henry, J. D., & Crawford, J. R. (2005). The short-form version of the Depression Anxiety Stress Scales (DASS-21): Construct validity and normative data in a large non-clinical sample. *British journal of clinical psychology, 44*(2), 227-239. <https://doi.org/10.1348/014466505X29657>
- [23] Izadinia, N., Amiri, M., ghorban Jahromi, R., & Hamidi, S. (2010). A study of relationship between suicidal ideas, depression, anxiety, resiliency, daily stresses and mental health among Tehran university students. *Procedia-Social and Behavioral Sciences, 5*, 1615-1619. <https://doi.org/10.1016/j.sbspro.2010.07.335>
- [24] Kim, Y. H., Yang, M. S., & Park, H. R. (2015). A study on a relationship between university students life stress and suicidal ideation: mediating effect of mental health. *Journal of Digital convergence, 13*(11), 291-301. <https://doi.org/10.14400/JDC.2015.13.11.291>
- [25] Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and psychological measurement, 30*(3), 607-610.
- [26] Lawshe, C. H. (1975). A quantitative approach to content validity I. *Personnel psychology, 28*(4), 563-575.
- [27] Mustaffa, S., Aziz, R., Mahmood, M. N., & Shuib, S. (2014). Depression and suicidal ideation among university students. *Procedia-Social and Behavioral Sciences, 116*, 4205-4208. <https://doi.org/10.1016/j.sbspro.2014.01.917>
- [28] Nock, M. K., Borges, G., Bromet, E. J., Alonso, J., Angermeyer, M., Beautrais, A., ... & De Graaf, R. (2008). Cross-national prevalence and risk factors for suicidal ideation, plans and attempts. *The British Journal of Psychiatry, 192*(2), 98-105. DOI: <https://doi.org/10.1192/bjp.bp.107.040113>
- [29] Norton, P. J. (2007). Depression Anxiety and Stress Scales (DASS-21): Psychometric analysis across four racial groups. *Anxiety, stress, and coping, 20*(3), 253-265
- [30] Osman, A., Kopper, B. A., Linehan, M. M., Barrios, F. X., Gutierrez, P. M., & Bagge, C. L. (1999). Validation of the Adult Suicidal Ideation Questionnaire and the Reasons for Living Inventory in an adult psychiatric inpatient sample. *Psychological Assessment, 11*(2), 115-123. <https://doi.org/10.1037/1040-3590.11.2.115>
- [31] Parvez, M., Agrwal, M., & K, M. N. S. (2018). Anxiety, depression and stress among undergraduate students: a comprehensive study of mathematics and engineering students. *Journal of advance and scholarly researches in allied education, 15*, 192-197. <https://doi.org/10.29070/15/57929>
- [32] Pereira, A., & Cardoso, F. (2015). Suicidal ideation in university students: prevalence and association with school and gender. *Paidéia (Ribeirão Preto), 25*(62), 299-306. <https://doi.org/10.1590/1982-43272562201503>
- [33] Pervin, M. M., & Ferdowshi, N. (2016). Suicidal ideation in relation to depression, loneliness and hopelessness among university students. *Dhaka University journal of biological sciences, 25*(1), 57-64.
- [34] Reynolds, W. M. (1991a). A school-based procedure for the identification of adolescents at risk for suicidal behaviors. *Family & Community Health: The Journal of Health Promotion & Maintenance, 4*(3), 64-75.
- [35] Reynolds, W. M. (1991b). Psychometric characteristics of the Adult Suicidal Ideation Questionnaire in college students. *Journal of personality assessment, 56*(2), 289-307. [https://doi.org/10.1207/s15327752jpa5602\\_9](https://doi.org/10.1207/s15327752jpa5602_9)
- [36] Ritzel, A. (2018). Reducing Depression and Suicide Ideation Among College Students. Theses and Dissertations--Public Health (M.P.H. & Dr.P.H.). 206. [https://uknowledge.uky.edu/cph\\_etds/206](https://uknowledge.uky.edu/cph_etds/206)
- [37] Shaheen, H., & Jahan, M. (2017). Student stress and suicidal ideation: The role of social support from family, friends, and significant others. *International Journal of Humanities and Social Science Invention, 6*(9), 21-32.
- [38] Stephenson, H., Pena-Shaff, J., & Quirk, P. (2006). Predictors of college student suicidal ideation: Gender differences. *College Student Journal, 40*(1), 109.
- [39] Valtonen, H., Suominen, K., Mantere, O., Leppämäki, S., Arvilommi, P., & Isometsä, E. T. (2005). Suicidal ideation and attempts in bipolar I and II disorders. *The Journal of clinical psychiatry, 66*(11), 1456-1462. <https://doi.org/10.4088/JCP.v66n1116>
- [40] Velting, D. M. (1999). Suicidal ideation and the five-factor model of personality. *Personality and Individual Differences, 27*(5), 943-952.
- [41] Wang, Y. H., Shi, Z. T., & Luo, Q. Y. (2017). Association of depressive symptoms and suicidal ideation among university students in China: A systematic review and meta-analysis. *Medicine, 96*(13). doi: 10.1097/MD.0000000000006476
- [42] Chioqueta, A.P., & Stiles, T.C. (2003). Suicide risk in outpatients with specific mood and anxiety disorders. *Crisis, 24*, 105-112.



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