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Knowledge, Attitude and Practice toward COVID 19 Preventive Measures: A cross-sectional study in Duhok Governorate

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Abstract

Background: Evaluation of Coronavirus illness prevention efforts in the public health field relies heavily on three factors: knowledge, attitude, and practice. According to the World Health Organization (WHO), new viral diseases pose a significant risk to global health. The purpose of this study was to find the relationship between socio-demographic factors and the use of prevention measures against COVID-19 by assessing the knowledge, attitude, and practice (KAP) of residents of Duhok governorate in Iraqi Kurdistan. Methods: A cross-sectional study was conducted in the general population of Duhok Governorate, between the ages of 18 and 75, using a multi-stage cluster sampling technique. A structured questionnaire was employed, and it included a KAP questions about potential preventive measures for COVID-19 (vaccines, face masks, social distances and hygiene). Additionally, the demographics were evaluated. Results: One thousand people took part in the study, and 77.5 % of them were able to correctly identify the best preventative steps to take against the spread of the COVID-19 virus (Excellent). However, only 56.9% of the public had a positive attitude on and 66.1% of the population really took preventive actions against COVID-19 (Moderate). Our results showed that sex, marital status and economic status in the knowledge test were no significant correlation at ($P<0.01$). In contrast, there was statistically significant variation across all other demographic factors (age, occupation, religion, education, and place of residence) at ($P<0.01$). However, only religion showed a significant correlation at ($P<0.01$) on the attitude test, but both sex and location matched on the practice test. Other demographic factors, such as age, occupation, and education level, were significant at ($P<0.01$). Conclusion: According to the results, almost three quarter of the population in the Duhok Governorate has outstanding knowledge in relation to socio-demographic factors, and more than half have a reasonable attitude and practice regarding COVID-19 preventive measures.

Keywords
Knowledge, Attitude, Practice, COVID-19, Prevention

The WHO states that newly developing viral infections pose a significant risk to global public health. Several major viral pandemics, such as 2009's H1N1 flu and 2002-2003's SARS-CoV, have been observed throughout the past two decades (1). After respiratory syndrome coronavirus (MERS-CoV) emerged in the Middle East in 2012, particularly in Saudi Arabia, the world has recently been plagued by the 2019 Coronavirus Disease (COVID-19) (2). As of August 8th, 2022, a total of 590,823,934 cases and over 6,443,393 deaths had been reported worldwide (3). The first known case of infection with COVID-19 in Kurdistan was

reported on March 1, 2020, in the city of Sulaymaniyah (4). On March 19, 2020, in Duhok city, officials confirmed the first case of COVID-19 (5). The government adopted a number of measures to stop spread of the ongoing COVID-19 pandemic. In spite of the government's easing of COVID-19 restrictions on bars, taxis, and restaurants, the number of cases is continuing to rise (6). A recent study looked at the correlation between people's attitudes and knowledge about infectious diseases and their level of fear, finding that the latter contributed to the spread of the disease and pushed them to seek alternative treatment methods (7). Improving COVID-19 knowledge, attitudes, and practices in the community is a primary strategy for preventing the spread of this virus. Additionally, active instances must be identified and contained within the community (8,9). In order to evaluate the public's knowledge of the disease, it is necessary to know what is the plan to prevent it, and how well they can demonstrate that they understand how the disease spreads and how to stop it. Researchers in Duhok Governorate set to find how much Kurds know about COVID-19 and how willing they were to take steps to protect them from it.

Methodology

Population: According to the Kurdistan Regional Statistics Office, the population of Duhok Governorate estimated to be 1,800,000 (10).

Sampling and Sample: A cross-sectional study was carried out in Duhok Governorate by using multistage random sampling and cluster random sampling. The sample size was determined by the total population of Duhok Governorate. Using online Raosoft software for determining the sample size (11). With inputs of a 95% confidence level, a 5 % margin of error, and 50 % projected prevalence, a total of 385 samples were required as the sample size. For more accuracy, the sample size was increased to 1,000 people from the Governorate of Duhok.

Inclusion and exclusion criteria: All individuals between the ages of 18 and 75 who were willing to participate in the study were considered for inclusion. Those who are dealing with mental illness were also denied entry.

Data Collection: The data were collected between 1 December 2021 and 1 March 2022. The data from the Duhok governorate were gathered through in-person interviews with the help of semi-structured questionnaires. The questions on the questionnaire were broken up into four categories: knowledge, attitude, practice, and socio-demographics. The residence of participations counts as Urban and Rural area. The Urban consists of (governorate, city and town) and the rural consists of (village and complex). The economic status was divided into five groups based on the income classifications that categorized by government; who has income more than 1500 USD count as (Very good), between 750 to 1500 USD (Good), 500 to 750 USD (Medium), 300 to 500 USD (Bad) and less than 300 USD (Very bad) (12). A multi-stage sampling method was used. Each right answer was worth 3 points, wrong answers were worth 1, and "I'm not sure" was worth 2 points. The researcher informed the participants of the research's goals and assured them that their personal information would be kept private. All participants gave their verbal agreement to the researcher. The approval letter was given by the Research Ethics Committee of the Directorate General of Health (reference number: 06052021-5-4).

Data Analysis: The data were analyzed using version 25.0 of the statistical program for social sciences (SPSS) (IBM NY, USA). As part of the statistical study, the percentage, frequency distribution, means, and standard deviations were calculated.

Results

Socio-demographic

Table 1 shows the distribution of the demographic characteristics of the participants in this study sample. The total sample of the study is 1000, the mean age of participants was 30.08 years (standard deviation = 10.12; range, 18 to 75), males were 474 (47.4%), and 526 (52.6%) were females. The marital status was divided as 520 (52%) were singles, 470 (47%) were married and only 10 (1%) was divorced/widow. The Self-Employee was the largest number of the samples have the occupation 239 (23.9%), and the majority of the samples were Muslim in region 917 (91.7%). In terms of level of education, the high education level was the highest number of the sample 450 (45%), more than half of the

samples were living in urban 610 (61%) while 390 (39%) were lining in rural aeras. The medium level of economic status was the large number 316 (31.6%).

Table 1: Socio-demographic characteristics of all participants

Demographic	Characteristics	Total N=1000	Percent %
Age group (years)	18-28	523	52.3
	29-39	330	33
	40-50	102	10.2
	51-61	25	2.5
	62-72	18	1.8
	≥ 73	2	0.2
Sex	Male	474	47.4
	Female	526	52.6
Marital Status	Single	520	52
	Married	470	47
	Divorced/Widow	10	1
Occupation	Public Employee	249	24.9
	Private Employee	144	14.4
	Self-Employee	239	23.9
	Student	142	14.2
	Housewife	206	20.6
	Retired	20	2
Religion	Muslim	917	91.7
	Christian	28	2.8
	Yazidi	40	4
	Others	15	1.5
Level of Education	Illiterate	63	6.3
	Read and Write	251	25.1
	Primary School	31	3.1
	Secondary School	205	20.5
	High Education	450	45
Residence	Urban	610	61
	Rural	390	39
Economic Status	Very Good	98	9.8
	Good	173	17.3
	Medium	316	31.6
	Bad	218	21.8
	Very Bad	195	19.5

Knowledge of COVID-19

There was a total of four sections of questions about COVID-19 that participants had to answer. The first of them concerned the participants' knowledge of COVID-19 vaccines. In the second section, we learn about their knowledge of face masks and how to use them properly to control the COVID-19 virus. Part three is their understanding of the importance of social distance in reducing the spread of COVID-19. The last component probes respondents' awareness of the role that hygiene plays in preventing the spread of COVID-19. (Figure 1). Figure 1. shows that most respondents have in-depth familiarity with COVID-19 (77.5 %) and the second large score was practice score (66.1%).

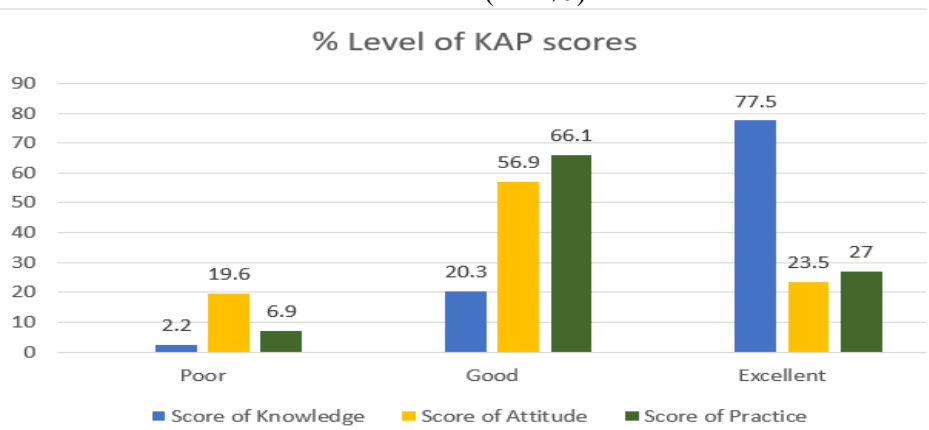

Figure1: Percentage level of knowledge, attitude and practice scores

In our research, we found that knowledge scores varied greatly among age groups, sex, marital status, occupation, religion, education level, place of residence, and socioeconomic situation. But there was no statistically significant relationship between how well people did on the knowledge test and their sex, marital status, or socioeconomic position (Table 2).

Table 2: Correlation of demographic characteristics and the level of knowledge scores of COVID-19

Demographics	Characteristics	Number (%)	Level of Knowledge (%)			P value
			Poor (%)	Good (%)	Excellent (%)	
Age group (years)	18-28	523(52.3)	11(1.1)	123 (12.3)	389 (38.9)	0.000
	29-39	330 (33)	5 (0.5)	49 (4.9)	276 (27.6)	
	40-50	102(10.2)	3 (0.3)	24 (2.4)	75 (7.5)	
	51-61	25(2.5)	2 (0.2)	4 (0.4)	19 (1.9)	
	62-72	18 (1.8)	0 (0)	3 (0.3)	15 (1.5)	
	≥ 73	2 (0.2)	1 (0.1)	0 (0)	1 (0.1)	
Sex	Male	474(47.4)	12(1.2)	110 (11)	352 (35.2)	0.067
	Female	526(52.6)	10 (1)	93 (9.3)	423 (42.3)	
Marital Status	Single	520(52)	11(1.1)	113 (11.3)	396 (39.6)	0.895
	Married	470 (47)	11(1.1)	88 (8.8)	371 (37.1)	
	Divorced/Widowed	10 (1)	0 (0)	2 (0.2)	8 (0.8)	
Occupation	Public Employee	249(24.9)	2 (0.2)	36 (3.6)	211 (21.1)	0.000
	Private Employee	144(14.4)	4 (0.4)	33 (3.3)	107 (10.7)	
	Self-employed	239(23.9)	9 (0.9)	67 (6.7)	163 (16.3)	
	Student	142(14.2)	3 (0.3)	40 (4)	99 (9.9)	
	Housewife	206(20.6)	3 (0.3)	25 (2.5)	178 (17.8)	
	Retired	20 (2)	1 (0.1)	2 (0.2)	17 (1.7)	
Religion	Muslim	917(91.7)	18(1.8)	182 (18.2)	717 (71.7)	0.006
	Christian	28 (2.8)	2 (0.3)	7 (0.7)	19 (1.9)	
	Yazidi	40 (4)	0 (0)	8 (0.8)	32 (3.2)	
	Others	15 (1.5)	2 (0.2)	6 (0.6)	7 (0.7)	
Level of Education	Illiterate	63 (6.3)	3 (0.3)	14 (1.4)	46 (4.6)	0.000
	Read and Write	251(25.1)	8 (0.8)	41 (4.1)	202 (20.2)	
	Primary School	31 (3.1)	1 (0.1)	18 (1.8)	12 (1.2)	
	Secondary School	205(20.5)	4 (0.4)	46 (4.6)	155 (15.5)	
	High Education	450 (45)	6 (0.6)	84 (8.4)	360 (36)	
Residence	Urban	610 (61)	12(1.2)	101 (10.1)	497 (49.7)	0.001
	Rural	390 (39)	10 (1)	102 (10.2)	278 (27.8)	
Economic Status	Very Good	98 (9.8)	3 (0.3)	20 (2)	75 (7.5)	0.408
	Good	173(17.3)	2 (0.2)	42 (4.2)	129 (12.9)	
	Medium	316(31.6)	9 (0.9)	53 (5.3)	254 (25.4)	
	Bad	218(21.8)	2 (0.2)	46 (4.6)	170 (17)	
	Very Bad	195(19.5)	6 (0.6)	42 (4.2)	147 (14.7)	

Attitude of COVID-19

The average number of questions answered correctly out of a possible 24 was 11.51 (standard deviation = 5. 21; ranging from 1−24), indicating a 90% success rate. Over half, 569 people (56.9%), had a neutral attitude towards COVID-19 (Figure 1). Attitude scores also differed

considerably by age, gender, marital status, occupation, religion, education, region of residence, and socioeconomic status (Table 3). Nonetheless, as demonstrated in, only religion on the attitude test was not correlated significantly at ($P<0.01$) (Table 3).

Table 3: Correlation of demographic characteristics and the level of attitude scores of COVID-19

Demographics	Characteristics	Number (%)	Level of Attitude (%)			P value
			Poor (%)	Good (%)	Excellent (%)	
Age group (years)	18-28	523(52.3)	129(12.9)	292(29.2)	102(10.2)	0.003
	29-39	330 (33)	48 (4.8)	191(19.1)	91 (9.1)	
	40-50	102(10.2)	11 (1.1)	60 (6)	31 (3.1)	
	51-61	25 (2.5)	4 (0.4)	13 (1.3)	8 (0.8)	
	62-72	18 (1.8)	4 (0.4)	11 (1.1)	3 (0.3)	
	≥ 73	2 (0.2)	0 (0)	2 (0.2)	0 (0)	
Sex	Male	474(47.4)	74 (7.4)	296(29.6)	104(10.4)	0.001
	Female	526(52.6)	122(12.2)	273(27.3)	131(13.1)	
Marital Status	Single	520 (52)	140 (14)	281(28.1)	99 (9.9)	0.000
	Married	470 (47)	54 (5.4)	281(28.1)	135(13.5)	
	Divorced/Widowed	10 (1)	2 (0.2)	7 (0.7)	1 (0.1)	
Occupation	Public Employee	249(24.9)	14 (1.4)	153 (15.3)	82 (8.2)	0.000
	Private Employee	144(14.4)	22 (2.2)	82 (8.2)	40 (4)	
	Self-employed	239(23.9)	48 (4.8)	148 (14.8)	43 (4.3)	
	Student	142(14.2)	29 (2.9)	88 (8.8)	25 (2.5)	
	Housewife	206(20.6)	79 (7.9)	84 (8.4)	43 (4.3)	
	Retired	20 (2)	4 (0.4)	14 (1.4)	2 (0.2)	
Religion	Muslim	917(91.7)	186(18.6)	525 (52.5)	206(20.6)	0.023
	Christian	28 (2.8)	3 (0.3)	16 (1.6)	9 (0.9)	
	Yazidi	40 (4)	5 (0.5)	17 (1.7)	18 (1.8)	
	Others	15 (1.5)	2 (0.2)	11 (1.1)	2 (0.2)	
Level of Education	Illiterate	63 (6.3)	19 (1.9)	41 (4.1)	3 (0.3)	0.000
	Read and Write	251 25.1)	92 (9.2)	124 (12.4)	35 (3.5)	
	Primary School	31 (3.1)	5 (0.5)	17 (1.7)	9 (0.9)	
	Secondary School	205(20.5)	33 (3.3)	119 (11.9)	53 (5.3)	
	High Education	450 (45)	47 (4.7)	268 (26.8)	135(13.5)	
Residence	Urban	610 (61)	136(13.6)	349 (34.9)	125(12.5)	0.003
	Rural	390 (39)	60 (6)	220 (22)	110 (11)	
Economic Status	Very Good	98 (9.8)	41 (4.1)	43 (4.3)	14 (1.4)	0.000
	Good	173(17.3)	29 (2.9)	103 (10.3)	41 (4.1)	
	Medium	316(31.6)	61 (6.1)	177 (17.7)	78 (7.8)	
	Bad	218(21.8)	28 (2.8)	124 (12.4)	66 (6.6)	
	Very Bad	195(19.5)	37 (3.7)	122 (12.2)	36 (3.6)	

Practice of COVID-19

Our findings show that the average right answer score on the COVID-19 practice exam was 15.96 (SD = 3.91; range, 1-26), which is consistent with a 90% passing rate. Of the total number of participants, 661 (or 66.1%) had at least some experience with COVID-19 (Figure 1). Statistically significant differences in practice test results were seen by age, gender, marital status, occupation, religion, education, geography, and socioeconomic status (Table 4). With the exception of sex and place of residence, all other variables on the

practice exam were significantly correlated at (P<0.01) level or lower (Table 4).

Table 4: Correlation of demographic characteristics and the level of practice scores of COVID-19

Demographics	Characteristics	Number (%)	Level of Practice (%)			P value
			Poor (%)	Good (%)	Excellent (%)	
Age group (years)	18-28	523(52.3)	48 (4.8)	367 (36.7)	108 (10.8)	0.000
	29-39	330 (33)	13 (1.3)	197 (19.7)	120 (12)	
	40-50	102(10.2)	6 (0.6)	64 (6.4)	32 (3.2)	
	51-61	25 (2.5)	1 (0.1)	18 (1.8)	6 (0.6)	
	62-72	18 (1.8)	1 (0.1)	13 (1.3)	4 (0.4)	
	≥ 73	2 (0.2)	0 (0)	2 (0.2)	0 (0)	
Sex	Male	474(47.4)	38 (3.8)	305 (30.5)	131(13.1)	0.336
	Female	526(52.6)	31 (3.1)	356 (35.6)	139(13.9)	
Marital Status	Single	520 (52)	44 (4.4)	366 (36.6)	110 (11)	0.000
	Married	470 (47)	25 (2.5)	285 (28.5)	160 (16)	
	Divorced/Widowed	10 (1)	0 (0)	10 (1)	0 (0)	
Occupation	Public Employee	249(24.9)	4 (0.4)	142 (14.2)	103(10.3)	0.000
	Private Employee	144(14.4)	13 (1.3)	96 (9.6)	35 (3.5)	
	Self-employed	239(23.9)	27 (2.7)	163 (16.3)	49 (4.9)	
	Student	142(14.2)	16 (1.6)	104 (10.4)	22 (2.2)	
	Housewife	206(20.6)	8 (0.8)	139 (13.9)	59 (5.9)	
	Retired	20 (2)	1 (0.1)	17 (1.7)	2 (0.2)	
Religion	Muslim	917(91.7)	61 (6.1)	617 (61.7)	239(23.9)	0.001
	Christian	28 (2.8)	3 (0.3)	12 (1.2)	13 (1.3)	
	Yazidi	40 (4)	1 (0.1)	22 (2.2)	17 (1.7)	
	Others	15 (1.5)	4 (0.4)	10 (1)	1 (0.1)	
Level of Education	Illiterate	63 (6.3)	9 (0.9)	50 (5)	4 (0.4)	0.000
	Read and Write	251(25.1)	14 (1.4)	178 (17.8)	59 (5.9)	
	Primary School	31 (3.1)	3 (0.3)	21 (2.1)	7 (0.7)	
	Secondary School	205(20.5)	15 (1.5)	142 (14.2)	48 (4.8)	
	High Education	450 (45)	28 (2.8)	270 (27)	152(15.2)	
Residence	Urban	610 (61)	40 (4)	405 (40.5)	165(16.5)	0.866
	Rural	390 (39)	29 (2.9)	256 (25.6)	105(10.5)	
Economic Status	Very Good	98 (9.8)	13 (1.3)	75 (7.5)	10 (1)	0.000
	Good	173(17.3)	11 (1.1)	121 (12.1)	41 (4.1)	
	Medium	316(31.6)	17 (1.7)	190 (19)	109(10.9)	
	Bad	218(21.8)	12 (1.2)	142 (14.2)	64 (6.4)	
	Very Bad	195(19.5)	16 (1.6)	133 (13.3)	46 (4.6)	

Discussion

The study focused on determining the link between sociodemographic factors and the use of COVID-19 prevention measures by looking at the knowledge, attitude, and practice (KAP) of people in Duhok governorate in Iraqi Kurdistan. Of the 1,000 people we studied, 52.3% were between the ages of 18 and 28, and the KAP towards COVID-19 score among young people was significantly greater than it was among people of other ages at (P<0.01). In terms of COVID-19, today's youth are more likely to be up-to-date because they have grown up with modern life and technologies like social media. Similarly, the

WHO ranks the elderly as the group most likely to get infectious diseases (13).

Our findings indicate that more women than men took part in the study. Because the study was carried out throughout three distinct periods, we can only assume that more women than men stayed at home during those times (morning, evening, and night). In terms of knowledge and practice, there was no statistically significant difference between men and women. However, men scored much higher on the attitude scale at ($P<0.01$).

In general, females outnumbered males when it came to engaging in preventative measures. This finding has the potential to be of great importance as it suggests that empowering women to play a central role in spreading information and preventative measures to their households can increase adoption rates (14). Surprisingly, there are significant differences in participants' knowledge, attitudes, and practices based on demographic variables such as age, gender, marital status, occupation, religion, education, residence, and income. In contrast, Saqlain et al. found no differences in attitudes based on demographic variables including age, gender, level of experience, or occupation (15). Ferdous et al. also found that while demographic factors including age, gender, and level of experience were not linked to COVID-19 opinions, occupational status was (14).

More than half of the sample was constituted of single people, and while marital status did not significantly affect their knowledge score, it did affect their attitude and practice at ($P<0.01$). Recent research have indicated that greater awareness of COVID-19 is strongly associated with being male, between the ages of 16 and 29, married, having a high level of education, being employed, or being a student (14).

It is noteworthy to highlight that the knowledge, attitude, and practice scores of public employees were significantly higher than other occupational characteristics at ($P<0.01$). In Duhok Governorate, the frequency of COVID-19-infected cases rises due to a lack of COVID-19-preventive measures among the local people. The public sector employed the greatest number of preventative measures against COVID-19 compared to all other occupations. This may be the result of government restrictions and employee sanctions.

Religion was found to be protective against COVID-19 in terms of knowledge and behavior, but not in terms of attitude at ($P<0.01$). Not surprisingly, the majority of respondents identified as Muslims, and they view pandemics as God's punishment for humanity. It is common knowledge that Muslims will turn out in large numbers to pray on Fridays, during the celebration of Eid, and at cemeteries. Those who practice the ritual washing of sick bodies, however, are likely to spread the disease to others. Most people think that a person's moral and religious beliefs, as well as how he or she sees risk, are important factors (16).

Participants with lower levels of education, such as the illiterate and those who had just finished elementary school (9.4% of the sample), had less detailed knowledge, attitudes, and practice habits. Possible causes include insufficient awareness of and comprehension of preventative guidelines, especially in print media like newspapers. Audio-only mass advertising that includes visual representations of instructions and awareness will thus be useful in reaching people with a wide range of reading skills (13).

A total of 497 (49.7%) of participants lived in an urban area, and 349 (34%) of those who participated in the study had a positive attitude about life. On the other hand, residential situations made no difference in the real world ($P<0.01$).

Scores of 177 and 190 (17.7% and 19.0%, respectively) on the attitude and practice scales were significantly higher among those with a medium economic position. The knowledge score was not affected by socioeconomic level, though, at ($P< 0.01$). In line with other studies, we found that people with lower incomes were less likely to care about their health (17).

Similarly, our results demonstrate that a high level of knowledge among people leads to control and reduces the number of cases in a community. Vaccines against COVID-19 are an integral part of the fight against the virus and its spread. Given that approximately 30%

of the population in Duhok Governorate has received more than one dose of COVID-19 vaccine, the distribution of these vaccines has had a significant impact on the number of COVID-19 cases. Prevention of disease, illness, hospitalization, and mortality are all indicators of a vaccine's success (18). The WHO, however, has stated that the COVID-19 vaccine has a significant influence on reducing the risk of sickness without requiring a complete quarantine. Some people have gotten COVID-19 even though they got all of their shots, and sick people can spread the virus to others (19).

Conclusion:

The study discovered that three-quarters of Duhok Governorate residents have excellent knowledge in relation to socio-demographic characteristics, and more than half of the population has an attitude and practice toward it. It is important to invest in preventive interventions so that no gap in attitude, practice, or action paves the way for any level of preventive measures.

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Conflict of interest

There are no conflicts of interest.

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