

**Nazarbayev University School of Medicine**

**Mental health and suicidality among gay and bisexual men in Kazakhstan. A prevalence study.**

**Master of Public Health Thesis Project**

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## Introduction

Suicide is the act of killing yourself. According to WHO about 800,000 people die by suicide annually and many more attempt it. The evidence shows that global burden of suicide lay heavily on low- and middle-income countries. In 2015, 78% of all known suicides occurred in these countries, and suicide accounted for 1.4% of all deaths worldwide, and ranked as 17<sup>th</sup> leading cause of death (WHO, 2013). Men are more likely to die of suicide than women, and this is more prominent in high-income countries with ratio of three men to every woman.

Kazakhstan scores very high on the suicide rate scale compared to other countries. According to the study by Värnik et al. (2012) it scored 7<sup>th</sup>, and according to WHO Kazakhstan ranked 5<sup>th</sup> in 2015 for suicide. The rate has been decreasing steadily for the last 20 years in Kazakhstan from 30 deaths in 1995 to 16 deaths per 100 000 people in 2015. Yet a big gap still exists between males and females, where former group has approximately three times higher suicide rates than the latter, as per 2015. Age groups 35-44, and 75 and over have the highest crude death rate due to suicide (WHO, 2013).

Countries vary greatly in the suicide methods. Hanging, firearm suicide, pesticide suicide, jumping from a height, and poisoning by drugs are the most prominent methods (Fisher, Comstock, Monk, & Sencer, 1993; Värnik et al., 2008; Sarchiapone, Mandelli, Iosue, Andrisano, & Roy, 2011).

One should be careful, however, measuring suicide due to the difficulty measuring the component of intent. The official figures on completed suicide and suicide attempts are likely to be under-reported in many countries as it is a very sensitive issue and even illegal in many countries. 25 countries have laws that consider punishment for suicide attempters and 20 countries follow Islamic law (Sharia), which also allow punishing attempters without specific

legal laws (Mishara, & Weisstub, 2015). Many Islamic countries also forbid traditional burial of a person who died of suicide. Thus, in these countries suicide is often misclassified as an accident, homicide, or another cause of death (Kahan, 2002). In other countries, where death registration system is unreliable, suicide may simply die uncounted.

Risk and protective factors of suicide are complex and vary across different sub-populations. They are classified and categorized in many different ways in the existing literature. One way of categorizing risk factors for suicide is provided by CDC - societal, community, relationship, and individual factors (CDC, 2017). Societal risk factors include access to means, inappropriate media reporting, and stigma associated with help-seeking behavior. Community risk factors comprise of stresses of acculturation and dislocation, discrimination, and trauma or abuse. Relationship factors are the sense of isolation or lack of social support, and relationship conflict, discord or loss. Important individual risk factors are previous suicide attempt, mental disorders, harmful use of alcohol, financial loss, hopelessness, chronic pain, and family history of suicide (WHO, 2013). This is not an exhaustive list and the factors can be classified differently. Moreover, each factor can be classified in more than one category depending on the context.

Lesbian, gay, bisexual, and transgender (LGBT) persons constitute sexual minorities and they require specific health care needs. Different health care problems, such as HIV, mental health disorders and suicide, affect LGBT disproportionately, mostly due to the increased exposure to the risk factors for such problems (Meyer, 2003; Safren, & Heimberg, 1999; Mills et al., 2004). Barriers to access a health care further exacerbate the problem. Incompetence of medical personnel to deal with LGBT, lack of culturally appropriate prevention services, and

reluctance to disclose sexual identity all make it hard for a sexual minority to utilize care (Mayer et al., 2008).

Up to date, growing body of evidence from systematic reviews and meta-analyses demonstrated that sexual minorities and gay men in particular are at a higher risk of suicide than their counterparts (Ploderl et al., 2013, Kann et al., 2011). A lifetime suicide attempt rates are higher in gay/bisexual men than in lesbian/bisexual women (King et al., 2008). A review by Haas et al. (2011) found that main factors for the increased risk of suicide among gay men are mental disorders and discrimination. The former includes mood, anxiety and substance use disorders, whereas the latter includes parental rejection and victimization by violence. Yet, several authors claim that neither of two groups of factors can entirely explain the excess of the risk of suicide compared to heterosexual men (Belik & Sareen, 2010; Haas et al., 2011). In fact, one study demonstrated that after controlling for general risk and protective factors for suicide, LGBT youth remain higher at attempting suicide, suggesting on the existence of LGBT unique risk factors (Wichstrom & Hegna, 2003).

A recent study on the estimation of number of men who have sex with men (MSM) in Kazakhstan found that there are approximately 154,000 such individuals aged 18-59. One should note that MSM might include not only gay men, but also bisexual men (Wu et al., 2016). Little is known about general and specific health issues of gay and bisexual men in Kazakhstan, including mental health and suicide.

The current study sought to address the knowledge gap by examining cross-sectionally demographic data, prevalence of mental health disorders, suicide ideation and suicide attempt among gay and bisexual men in Kazakhstan. It is also aimed at identifying risk and protective factors of suicide, general and specific to gay or bisexual men.

Drawing on the literature, I hypothesized that gay and bisexual men in Kazakhstan have higher rates of suicide ideation and suicide attempt, compared to heterosexual men. I additionally hypothesized that, consistent with previous studies, mental health disorders are associated with suicide ideation and attempt.

## **Methods and Materials**

### **Participants and procedure**

In this cross-sectional study I report on 204 gay or bisexual men in Kazakhstan who were surveyed between February 1<sup>st</sup> and March 27<sup>th</sup> 2018 across Kazakhstan using internet-based questionnaire. Several sampling methods were jointly used to recruit the participants. Unrestricted self-selected online surveys were posted on 17 different online communities/groups within social networks, where gay or bisexual men browsing the group could voluntarily participate in it. In addition, the snowball method was used, where gay or bisexual men forwarded the link to the online questionnaire to known to them gay or bisexual men. The rationale for using non-random sampling method is that gay and bisexual men group is a hidden population due to the stigma, prejudice, and discrimination and, therefore, will be reluctant to identify themselves (King et al., 2008; McCabe, Bostwick, Hughes, West, & Boyd, 2010). The other reason for using online questionnaire is to try recruiting individuals from across the entire country. Three popular social networks were used for this study: vk, facebook, and whatsapp. The participants were included in the study if they identified themselves as gay or bisexual; were 18 or over; were able to read and write in Russian or Kazakh language; and resided in Kazakhstan. All participants that were included in the study gave the consent to participate prior to the survey by ticking the appropriate box before the questionnaire appeared on the screen. No monetary reward was provided for the participation.

Self-reported online anonymous questionnaire was comprised of 47-items. It was developed in Google Docs and data was saved in comma-separated values (CSV) file format. The participants could choose from Russian or Kazakh languages. It was pre-tested on both gay and heterosexual men in both languages. The questionnaire measured demographic data and various aspects of health of the participants. To avoid missing data, all questions were labeled as 'required' in the Google Docs, so that participants had to complete a question at hand in order to progress in the questionnaire.

### Measures

#### *Suicide ideation and suicide attempt*

Paykel's questionnaire was designed to measure suicidal thoughts and attempts. It is comprised of five questions that include: life-weariness, death wishes, suicidal ideation, suicidal plans, and suicide attempts. Each question is rated on a 6-point Likert scale from 0 (= never) to 5 (=always). Sum of the scores ranged from 0 to 25, with higher scores meaning higher risk for suicide. Individuals were considered at risk of suicide if he scored 2 or greater to questions 3,4 and/or 5. The evidence suggests that Paykel Suicide Scale is a useful brief screening instrument for suicidal ideation/suicidal attempt (Brown, 2001).

#### *Emotional well-being*

Emotional well-being is an important dimension of the overall quality of life. In this study the emotional well-being is measured by using the WHO-5 Well-being Index that has a high clinimetric validity. It is comprised of 5 positively worded, non-invasive, questions related to positive mood, vitality, and general interests. Each item is rated on a 6-point Likert scale from 0 (= at no time) to 5 (= all of the time). Sum of the scores ranging from 0 to 25 then transformed to 0-100 scale by multiplying by 4, with higher scores meaning better subjective well-being.

Evidence suggests that a score of 50 or below is an indication for a low mood, and a score of 28 or below is a likely depression, which warrants further assessment (Topp, Østergaard, Søndergaard, & Bech, 2015).

### *Depression*

Depression is measured using the Beck Depression Inventory (BDI). It is a 20-item scale, self-report rating inventory that measures symptoms of depression. The BDI has a high internal consistency, with alpha coefficients of .81 for general population (Beck, Steer, & Garbin, 1988). The range of the scores from 0 to 60 then divided into 6 groups, according to the Table 1 (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961).

**Table 1. Beck Depression Inventory total score interpretation.**

<b>Total score</b>	<b>Levels of depression</b>
1-10	These ups and downs are considered normal
11-16	Mild mood disturbance
17-20	Borderline clinical depression
21-30	Moderate depression
31-40	Severe depression
Over 40	Extreme depression

### *Anxiety*

The 20-item Zung Self-rating Anxiety Scale (SAS) was designed to quantify a level of anxiety, based on 4 groups of manifestation: cognitive, motor, autonomic, and central nervous system symptoms. The items are scored on 4-point Likert scale of 1 (little or none of the time) to 4 (most of the time). Range 20-44 considered normal, 45-59 – mild to moderate anxiety level, 60-74 range interpreted as marked to severe anxiety, and highest possible score range 75-80 is an extreme anxiety level (Zung, 1971).

### *Internet addiction*



Diagnostic Questionnaire (DQ) is a brief 8-item questionnaire used as a screening instrument for measuring Internet addiction, which can be seen as an impulse-control disorder. Individuals who answer “yes” to 5 or more of the questions are classified as dependent Internet users and the rest are classified as nondependent Internet users (Young, 1996).

### *Impulsiveness*

Barratt Impulsiveness Scale (BIS-11) is a 30 item self-report instrument used to assess personality construct of impulsiveness in research and clinical settings (Stanford et al., 2009). BIS-11 is used in the current study since impulsiveness is a common problem for people who exhibit suicidal behaviors (Dougherty et al., 2004). Each item is rated on 4-point Likert scale from 1 (= rarely/never) to 4 (= almost always/always). The total score ranges from 30 to 120, and according to the latest review a total score of 72 or above is used to classify an individual as highly impulsive. Score between 52-71 is considered as within normal limits for impulsiveness, and score lower than 52 suggests that an individual is either extremely over-controlled or did not completed the questionnaire honestly (Knyazev & Slobodskaya, 2006). Internal consistency coefficients for the BIS-11 range from .79 to .83 for various populations (Patton, Stanford, & Barratt, 1995).

### *Stress*

The perception of stress is measured by the Perceived Stress Scale (PSS). 10 questions of a general nature ask about thoughts and feelings during the last month. Each item is rated on a 5-point Likert scale from 0 (= never) to 4 (= very often), however scale of positively worded items 4,5,7 & 8 must be reversed before summing the scores that range from 0 to 40. Reliability estimates were .82 to .85 in a university samples and middle-aged adults, respectively (Roberti, Harrington, & Storch, 2006).

### *Aggression*

The 12 item Buss-Perry Aggression Questionnaire-Short Form (BPAQ-SF) is scored on a 5-point Likert scale, ranging from 1 (= very unlike me) to 5 (= very like me), used to capture physical aggression, verbal aggression, anger and hostility. BPAQ-SF validation study suggested that the instrument has adequate reliability and concurrent validity (Diamond & Magaletta, 2006).

### *Data analysis*

Collected data was analyzed in STATA 12.0. The final cleaned database included 204 observations. To assess the association between independent and dependent variables (at risk of suicide versus not at risk of suicide) t-test and Chi-square tests were used. T-test was used for the analysis of continuous variables. Chi-square test was used for the analysis of categorical variables, and if the assumptions were violated, Fisher's exact test was applied. All results with a p-value less than 0.05 were considered as statistically significant and were further analyzed. To measure the adjusted prevalence risk ratios for independent variables that were significant poisson regression with robust equal variances was used. This method was preferred to frequently used multivariate logistic regression due to common outcome in the sample. Goodness-of-fit chi-squared test was used to evaluate fitness of the model.

### *Ethical considerations*

The Institutional Research Ethics Committee at Nazarbayev University approved this study. The data collection method was fully anonyms, and no personal identifiers, such as names, IDs, cellphone number or emails about the participants were collected. All participants signed the informed consent form before completing the questionnaire. The data will be stored at the computer of the student researcher and protected by a password.

## Results

Detailed socio-demographic characteristics and family context of the respondents are provided in Table 2. 204 respondents were included in the analysis. The mean age of participants was 25.8 years. Majority of gay and bisexual men identified themselves as Kazakh (65.2%), followed by Russian (20.6%). The number of homosexual men is three times higher than bisexual men (75.5% and 24.5% respectively). More than half of the participants have obtained bachelor's degree or higher (62.3%). The majority (70.6%) of gay and bisexual men was raised in a traditional family with both parents, and almost one quarter (22.5%) was raised by a single parent. The rest were brought up by other family members, in a foster family or an institution.

A total of 113 (55.4%) of the participants were classified as at risk of suicide according to the Paykel Suicide Scale. The group at risk of suicide differed from the group not at risk in age, sexual orientation, income, and in number of close friends. At risk group participants tend to be slightly younger (mean age 25.07 and 26.74, respectively) and more often identify themselves as homosexual, rather than bisexual. Not at risk group contain almost twice more gay and bisexual men with master's degree or higher (27.5% and 14.1%, respectively). Not at risk group have more than two times more individuals earning 200,000 or more tenge per month (31.8% and 13.3% respectively), whereas the former group has almost twice less people earning less than 50,000 tenge compared to the other group (15.4% and 28.3% respectively). Two groups did not differ in ethnicity, religious affiliation and family of origin.

**Table 2. Socio-demographic characteristics and family context in gay and bisexual men at risk and not at risk of suicide**

Socio-demographic characteristics		Total Sample N=204	Not at risk n=91	At risk n=113	Chi-square or t-test
<b>Age Mean ± SD</b>		25.81±5.78	26.74±6.07	25.07±5.45	p=.04*
<b>Sexual Orientation</b>	Homosexual	154 (75.5%)	59 (64.8%)	95 (84.1%)	p=.001**
	Bisexual	50 (24.5%)	32 (35.2%)	18 (15.9%)	

<b>Ethnicity</b>	Kazakh	133 (65.2%)	58 (63.7%)	75 (66.4%)	p=.9
	Russian	42 (20.6%)	19 (20.9%)	23 (20.3%)	
	Other	29 (14.2%)	14 (15.4%)	15 (13.3%)	
<b>Education</b>	High school	25 (12.2%)	10 (11.0%)	15 (13.3%)	p=.08
	Technical/vocational training	52 (25.5%)	24 (26.4%)	28 (24.8%)	
	Bachelor's degree	86 (42.2%)	32 (35.1%)	54 (47.8%)	
	Master's degree/PhD	41 (20.1%)	25 (27.5%)	16 (14.1%)	
<b>Income</b>	Less than 50,000 tenge per month	46 (22.5%)	14 (15.4%)	32 (28.3%)	p=.002**
	50,000-99,999 tenge per month	40 (19.6%)	16 (17.6%)	24 (21.2%)	
	100,000-149,999 tenge per month	48 (23.5%)	21 (23.1%)	27 (23.9%)	
	150,000-199,999 tenge per month	26 (12.8%)	11 (12.1%)	15 (13.3%)	
	200,000 or more tenge per month	44 (21.6%)	29 (31.8%)	15 (13.3%)	
<b>Religious affiliation</b>	Islam	74 (36.3%)	34 (37.3%)	40 (35.4%)	p=.56
	Russian Orthodox Church	25 (12.3%)	15 (16.5%)	10 (8.9%)	
	Other	6 (2.9%)	3 (3.3%)	3 (2.6%)	
	No religious affiliation (indifferent)	38 (18.6%)	14 (15.4%)	24 (21.2%)	
	Agnostic	26 (12.7%)	10 (11.0%)	16 (14.2%)	
	Atheist	35 (17.2%)	15 (16.5%)	20 (17.7%)	
<b>Family of origin</b>	Traditional family	144 (70.6%)	61 (67.0%)	83 (73.4%)	p=.5
	Single parent	46 (22.5%)	24 (26.4%)	22 (19.5%)	
	Other	14 (6.9%)	6 (6.6%)	8 (7.1%)	
<b>Mean number of close friends ± SD</b>		3.87±4.19	4.78±5.06	3.14±3.16	p=.005**

\*p<.05, \*\*p<.01.

Table 3 reveals that gay and bisexual men at high risk of suicide reported significantly higher frequency of having a chronic illness than the other group (53.1% and 30.8%, respectively). Overall health state was significantly better in the group of not at risk (p=0.039). Mean BMI and the frequency having a physical disability were not statistically significantly different between two groups.

**Table 3. Health status in gay and bisexual men at high risk and not at high risk of suicide**

<b>Health Status</b>	<b>Total Sample N=204</b>	<b>Not at risk n=91</b>	<b>At risk n=113</b>	<b>Chi-square or t-test</b>
<b>Having a physical disability</b>	11 (5.4%)	3 (3.3%)	8 (7.1%)	p=.35
<b>Having a chronic illness</b>	88 (43.1%)	28 (30.8%)	60 (53.1%)	p=.001**
<b>Overall state of health</b>	110 (53.9%)	58 (63.7%)	52 (46.0%)	p=.039*
Good/ very good				
Fair	81 (39.7%)	29 (31.9%)	52 (46.0%)	
Bad/ very bad	13 (6.4%)	4 (4.4%)	9 (8.0%)	
<b>Mean BMI± SD</b>	22.42±4.30	22.61±4.15	22.26±4.43	p=.57

\*p<.05, \*\*p<.01.

Almost half of the participants were identified with some form of depression and 35% with mild to severe anxiety. In contrast, about 90% of all participants score high on WHO-5 Well-being Index indicating good emotional well-being. Of all participants, about 32% were identified as Internet dependent users that indicates on impulse-control disorder.

All four tools designed to measure different aspects of mental health revealed statistically significant differences between at risk and not at risk of suicide groups. The details are presented in Table 4. The former group scored significantly lower on the WHO-5 Well-being Index demonstrating poorer emotional well-being. 15% of individuals at risk of suicide group scored lower than 28, indicating likely depression, compared to only 3.3% in not at risk of suicide group. Significantly higher proportion of participants in at risk of suicide group was detected with moderate to severe depression compared to the other group, according to the BDI screening tool (37.1% and 6.6%, respectively). Similar trends were also observed with anxiety and Internet addiction. 52.2% and 15.4% of participants scored SAS  $\geq$  45 in at risk and not at risk groups, respectively, indicating mild to severe anxiety; and 40.7% and 20.9% of participants were identified as dependent Internet users in those two groups.

**Table 4. Mental health in gay and bisexual men at high risk and not at high risk of suicide**

<b>Mental health scales</b>	<b>Total Sample N=204</b>	<b>Not at risk n=91</b>	<b>At risk n=113</b>	<b>Chi- square or t-test</b>
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<b>Well-being Index (WHO-5)</b>	Mean ± SD	61.14±21.63	68.75±20.36	55.01±20.73	p<.001**
	WHO-5≤28 (poor well-being, screening for depression)	20 (9.8%)	3 (3.3%)	17 (15.0%)	p=.005**
<b>Beck Depression Inventory (BDI)</b>	Mean ± SD	12.53±9.99	7.21±6.54	16.81±10.25	p<.001**
	n (%) BDI < 11 (none)	110 (53.9%)	74 (81.3%)	36 (31.9%)	
	n (%) 11 ≤ BDI ≤ 16 (mild)	26 (12.8%)	8 (8.8%)	18 (15.9%)	
	n (%) 17 ≤ BDI ≤ 20 (borderline)	20 (9.8%)	3 (3.3%)	17 (15.1%)	p<.001**
	n (%) 21 ≤ BDI ≤ 30 (moderate)	37 (18.1%)	5 (5.5%)	32 (28.3%)	
	n (%) BDI > 30 (severe)	11 (5.4%)	1 (1.1%)	10 (8.8%)	
<b>Zung Self-rating Anxiety Scale (SAS)</b>	Mean ± SD	40.84±11.04	35.16±8.75	45.42±10.58	p<.001**
	n (%) SAS < 45 (none)	131 (64.2%)	77 (84.6%)	54 (47.8%)	
	n (%) 45 ≤ SAS < 60 (mild to moderate)	61 (29.9%)	14 (15.4%)	47 (41.6%)	p<.001**
	n (%) SAS > 60 (severe)	12 (5.9%)	0 (0%)	12 (10.6%)	
<b>Internet addiction (DQ)</b>	n (%) DQ ≥ 5 (dependent)	65 (31.9%)	19 (20.9%)	46 (40.7%)	p=.003**

\*\*p<.01

At risk of suicide gay and bisexual men reported significantly higher mean levels of perceived stress (PSS) and aggressiveness (BPAQ-SF). The average levels of impulsiveness did not statistically differ in two groups. The details of these personality traits and stress are provided in Table 5.

**Table 5. Personality traits and stress in gay and bisexual men at high risk and not at high risk of suicide**

Personality and stress scales		Total Sample N=204	Not at risk n=91	At risk n=113	Chi-square or t-test
<b>Barratt Impulsiveness Scale (BIS-11)</b>	n (%) BIS ≥ 72 (highly impulsive)	74 (36.3%)	27 (29.7%)	47 (41.6%)	p=.080
<b>Perceived Stress Scale (PSS)</b>	Mean ± SD	20.94±6.96	17.96±7.05	23.34±5.89	p<.001**

<b>Buss-Perry Aggression Questionnaire-Short Form (BPAQ-SF)</b>	Mean ± SD	31.72±9.07	29.20±8.30	33.75±9.19	p<.001**
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\*\*p<.01

Poisson regression with robust equal variances analysis is presented in Table 6. The analysis identifies associated with suicidal behavior variables among gay and bisexual men. The final model includes all variables that were significant, leaving those that were not. Though not statistically significant, age was also in the final model because it was included in similar previously-published studies (Mayer et al., 2008).

Identifying oneself as gay increased the likelihood of becoming at risk of suicide by 75% on average, compared to identifying oneself as bisexual, adjusting for age, depression, and anxiety. Individuals who score 11 or more on the BDI scale, indicating possible depression, are from 83% to 107% more likely to be classified at risk of suicide than those who score less than 11, adjusting for all other variables in the final model. Scoring between 45 and 60 on the Zung Self-rating Anxiety Scale, which indicates possible mild to moderate anxiety, increases the chances of being classified at risk of suicide by 44%, whereas scoring higher than 60 increases the chances by 60% considering all other variables in the model.

**Table 6. Adjusted prevalence risk ratios (PRR), 95% confidence intervals (95% CI) and p-values of factors associated with suicidal behavior.**

<b>Variable</b>	<b>Adjusted PRR</b>	<b>95% CI</b>	<b>p-value</b>
<b>Age</b>	0.98	0.96-1.00	0.12
<b>Sexual Orientation</b>			
Bisexual	1.00		
Gay	1.75	1.27-2.43	0.001**
<b>Depression</b>			
None (BDI < 11)	1.00		
Mild (11 ≤ BDI ≤ 16)	2.06	1.43-2.98	<0.001**
Borderline (17 ≤ BDI ≤ 20)	1.93	1.29-2.86	0.001**
Moderate (21 ≤ BDI ≤ 30)	2.07	1.47-2.92	<0.001**

Severe (BDI > 30)	1.83	1.23-2.72	0.003**
<b>Anxiety</b>			
None (SAS < 45)	1.00		
Mild to moderate ( $45 \leq \text{SAS} < 60$ )	1.44	1.07-1.93	0.016**
Severe (SAS > 60)	1.60	1.17-2.19	0.003**

\*p<.05, \*\*p<.01

## Discussion

The aim of the current study was to find the prevalence of mental health disorders, and suicidal behavior, as well as to identify possible associated with suicidal behavior factors among gay and bisexual men in Kazakhstan. First and foremost, consistent with the hypothesis of this study, the alarming prevalence of suicidal behavior is worthy of note. With about 55% of participant reporting serious suicidal thoughts or attempt in their lives, programs directed to resolve this problem in Kazakhstan should consider targeting this sub-population.

Consistent with the second hypothesis of this study it was revealed that anxiety and depression are highly associated with suicidal behavior. These findings support previous studies on sexual minorities and general population (Haas et al., 2011; Meyer, 2003; Belik & Sareen, 2010). The results suggest that even indication of mild anxiety or depression significantly increases the likelihood of being identified at risk of suicide. The results also revealed a threshold effect between depression and suicidality, where the increase in the severity of depression symptoms did not change the likelihood of suicidality. In contrast, the association between anxiety and suicidality indicate on the dose-response effect, where the likelihood of suicidality increases with the increase in the severity of the anxiety symptoms.

Sexual orientation also showed significant association with suicidal behavior in this study, where gay men reported more suicidal behavior than bisexual men. A systematic review on suicidal ideation and behavior between homosexual and bisexual individuals demonstrated



that the results of eleven studies included in the review were inconsistent (Pompili et al., 2014). Thus, further carefully designed longitudinal studies are needed to understand the relationship between sexual orientation and suicide.

### **Limitations**

The main limitation of this study is the sampling method, which endangers generalizability of the results to all gay and bisexual men in Kazakhstan. This limitation was dealt with by combining sampling methods, such as unrestricted self-selected online surveys, advertised on 17 online communities that covered all 16 oblasts of Kazakhstan, and the snowball method.

Another limitation is that Paykel Suicide Scale does not discriminate suicide ideation from suicide attempts, and, therefore, it was combined as suicidal behavior in this study.

Due to the cross-sectional nature of the study, no causal relations can be inferred from this study. However, this study can serve as a starting point for understanding the health of gay and bisexual men and a tool for policy making in Kazakhstan.

## References

- Beck, A. T., Steer, R.A., & Garbin, M.G. (1988) Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clinical Psychology Review*, 8(1), 77-100.
- Beck, A.T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961) An inventory for measuring depression. *Archives of General Psychiatry*, 4, 561-571.
- Belik, S. L., & Sareen J. (2010, April 23). *Sexual orientation and its relationship to mental disorders and suicidal behavior*. Paper presented at the annual conference of the American Association of Suicidology, Orlando, FL.
- Brown, G. K. (2001). A review of suicide assessment measures for intervention research with adults and older adults. Retrieved from: <https://www.sprc.org/sites/default/files/migrate/library/BrownReviewAssessmentMeasuresAdultsOlderAdults.pdf>
- Centers for Disease Control and Prevention (2017). Retrieved from: <https://www.cdc.gov/violenceprevention/suicide/riskprotectivefactors.html>
- Dougherty, D. M., Mathias, C. W., Marsh, D. M., Papageorgiou, T. D., Swann, A. C., & Moeller, F. G. (2004). Laboratory measured behavioral impulsivity relates to suicide attempt history. *Suicide and Life Threatening Behavior*, 34, 374–385.
- Diamond, P. M., & Magaletta, P. R. (2006). The Short-Form Buss-Perry Aggression Questionnaire (BPAQ-SF): A validation study with federal offenders. *Assessment*, 13(3), 227-240.

- Fischer, E. P., Comstock, G. W., Monk, M. A., & Sencer, D. J. (1993). Characteristics of completed suicides: Implications of differences among methods. *Suicide and Life-Threatening Behavior*, 23(2), 91-100.
- Haas, A. P., Eliason, M., Mays, V. M., Mathy, R. M., Cochran, S. D., D'Augelli, A. R., ... Clayton, P. J. (2011). Suicide and suicide risk in lesbian, gay, bisexual, and transgender populations: Review and recommendations. *Journal of Homosexuality*, 58(1), 10-51.
- Kahan, D.M. (2002). Shaming Punishments. In J. Dressler (Ed.), (2nd ed.). *Encyclopedia of Crime and Justice*, Vol. 4. (pp. 1483–1489). New York: Macmillan Reference.
- Kann, L., Olsen, E.O., McManus, T., Harris, W.A., Shanklin, S.L., Flint, K.H., Queen, B., Lowry, R., Chyen, D., Whittle, L., Thornton, J., Lim, C., Yamakawa, Y., Brener, N., Zaza, S. (2011). Sexual identity, sex of sexual contacts, and health- risk behaviors among students in grades 9–12-youth risk behavior surveillance, selected sites, United States, 2001–2009. *MMWR Surveillance Summaries*, 60, 1–133.
- King, M., Semlyen, J., Tai, S. S., Killaspy, H., Osborn, D., Popelyuk, D., & Nazareth, I. (2008). A systematic review of mental disorder, suicide, and deliberate self harm in lesbian, gay and bisexual people. *BMC Psychiatry*, 8, 70.
- Knyazev, G. G., & Slobodskaya, H. R. (2006). Personality types and behavioral activation and inhibition in adolescents. *Personality and Individual Differences*, 41, 1385–1395.
- Mayer, K. H., Bradford, J. B., Makadon, H. J., Stall, R., Goldhammer, H., & Landers, S. (2008). Sexual and Gender Minority Health: What We Know and What Needs to Be Done. *American Journal of Public Health*, 98(6), 989–995.
- McCabe, S. E., Bostwick, W. B., Hughes, T. L., West, B. T., & Boyd, C. J. (2010). The

relationship between discrimination and substance use disorders among lesbian, gay and bisexual adults in the United States. *American Journal of Public Health*, 100(10), 1946–1952.

- Meyer, I. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin*, 129(5), 674–697.
- Mills, T.C., Paul, J., Stall, R., Pollack, L., Canchola, J., Chang, Y.J., Moskowitz, J.T. and Catania, J.A. (2004). Distress and Depression in Men Who Have Sex with Men: The Urban Men's Health Study. *American Journal of Psychiatry*, 161, 278-285.
- Mishara, B. L., & Weisstub, D. N. (2015). The legal status of suicide: A global review. *International Journal of Law and Psychiatry*, 44, 54-74.
- Patton, J. H., Stanford, M. S., & Barratt, E. S. (1995). "Factor structure of the Barratt Impulsiveness Scale". *Journal of Clinical Psychology*, 51(6), 768–74.
- Ploderl, M., Wagenmakers, E. J., Tremblay, P., Ramsay, R., Kralovec, K., Fartacek, C., & Fartacek, R. (2013). Suicide risk and sexual orientation: A critical review. *Archives of Sexual Behavior*, 42, 715–727.
- Pompili, M., Lester, D., Forte, A., Seretti, M.E., Erbuto, D., Lamis, D.A., Amore, M., & Girardi, P. (2014). Bisexuality and suicide: A systematic review of the current literature. *J Sex Med*, 11, 1903–1913.
- Roberti, J. W., Harrington, L. N., & Storch, E. A. (2006). "Further Psychometric Support for the 10-Item Version of the Perceived Stress Scale". *Journal of College Counseling*, 9(2), 135–147.

- Safren, S. A., & Heimberg, R.G. (1999). Depression, hopelessness, suicidality, and related factors in sexual minority and heterosexual adolescents. *J Consult Clin Psychol*, 67, 859–866.
- Sarchiapone, M., Mandelli, L., Iosue, M., Andrisano, C., & Roy, A. (2011). Controlling Access to Suicide Means. *International Journal of Environmental Research and Public Health*, 8(12), 4550–4562.
- Stanford, M. S., Mathias, C. W., Dougherty, D. M., Lake, S. L., Anderson, N. E., & Patton, J. H. (2009). Fifty years of the Barratt Impulsiveness Scale: An update and review. *Personality and Individual Differences*, 47(5), 385-395.
- Topp, C.W., Østergaard, S.D., Søndergaard, S., & Bech, P., (2015). The WHO-5 Well-Being Index: a systematic review of the literature. *Psychotherapy and Psychosomatics*, 84 (3), pp. 167-176.
- Värnik, A., Kõlves, K., Feltz-Cornelis, C.M., Marusic, A., Oskarsson, H., Palmer, A., Reisch, T.J., Scheerder, G., Arensman, E., Aromaa, E., Giupponi, G., Gusmão, R., Maxwell, M., Pull, C.D., Szekely, A., Sola, V.P., & Hegerl, U. (2008). Suicide methods in Europe: a gender-specific analysis of countries participating in the “European Alliance Against Depression”. *Journal of epidemiology and community health*, 62(6), 545-51.
- Varnik, Peeter. (2012). Suicide in the World. *International journal of environmental research and public health*, 9(3), 760-71.
- Wichstrom, L., & Hegna, K. (2003). Sexual orientation and suicide attempt: A longitudinal study of the general Norwegian adolescent population. *Journal of Abnormal Psychology*, 112(1), 144-151.
- World Health Organization. (2013, May 1) Retrieved from

[http://www.who.int/healthinfo/statistics/mortality\\_rawdata/en/](http://www.who.int/healthinfo/statistics/mortality_rawdata/en/)

- Wu, E., Terlikbayeva, A., Hunt, T., Primbetova, S., Gun Lee, Y., & Berry, M. (2016). Preliminary Population Size Estimation of Men Who Have Sex With Men in Kazakhstan: Implications for HIV Testing and Surveillance. *LGBT Health*, 4(2), 164-167.
- Young, K. S. (1996). Internet Addiction: The Emergence of a New Clinical Disorder. *CyberPsychology & Behavior*, 1, 237-244.
- Zung, W.W. K. (1971). A Rating Instrument for Anxiety Disorders. *Psychosomatics*, 12, 371-379.

## Appendix 1 – Online survey

1. **What is your age?**\_\_\_\_\_
2. **What is your gender identity?**
  - a) Male
  - b) Female
  - c) Transgender
  - d) Other\_\_\_\_\_
3. **Do you consider yourself to be:**
  - a) Heterosexual or straight
  - b) Gay or lesbian
  - c) Bisexual
  - d) Other\_\_\_\_\_
4. **Please specify your ethnicity:**
  - a) Kazakh
  - b) Russian
  - c) Uzbek
  - d) Ukrainian
  - e) Kyrgyz
  - f) Uigur
  - g) Tatar
  - h) German
  - i) Korean
  - j) Other\_\_\_\_\_
  - k) I don't know
5. **Please indicate your city of residence:**
  - a) Aktau
  - b) Almaty
  - c) Astana
  - d) Atyrau
  - e) Balkhash
  - f) Karaganda
  - g) Kokshetau
  - h) Kostanay
  - i) Kyzylorda
  - j) Pavlodar
  - k) Petropavlovsk
  - l) Semey
  - m) Shymkent
  - n) Taraz
  - o) Temirtau
  - p) Turkestan
  - q) Uralsk
  - r) Ust-Kamenogorsk
  - s) Zhezkazgan
  - t) Other\_\_\_\_\_
6. **What is the highest level of education you have completed?**
  - a) High school
  - b) College or the equivalent
  - c) Bachelor's degree or the equivalent
  - d) Master's degree or the equivalent
  - e) PhD or the equivalent
  - f) Other\_\_\_\_\_
7. **What is your monthly income:**
  - a) Less than 50 000 tenge
  - b) 50 000 – 99 999 tenge
  - c) 100 000 – 149 999 tenge
  - d) 150 000 – 199 999 tenge
  - e) 200 000 – 249 999 tenge
  - f) 250 000 – 299 999 tenge
  - g) 300 000 or more
8. **What is your religious preference:**
  - a) Muslim
  - b) Christian
  - c) Jewish
  - d) Buddhist
  - e) Atheist
  - f) Agnostic
  - g) Non-religious
  - h) Other\_\_\_\_\_
9. **You were raised:**
  - a) In a traditional family
  - b) By a single parent
  - c) By grandparents
  - d) By other relatives
  - e) In adoption or care family
  - f) In institution
  - g) Other\_\_\_\_\_

10. Please indicate for each of the five statements which is closest to how you have been feeling over the last two weeks. Notice that higher numbers mean better wellbeing.

	Over the last two weeks	All of the time	Most of the time	More than half of the time	Less than half of the time	Some of the time	At no time
1.	I have felt cheerful and in good spirits	5	4	3	2	1	0
2.	I have felt calm and relaxed	5	4	3	2	1	0
3.	I have felt active and vigorous	5	4	3	2	1	0
4.	I woke up feeling fresh and rested	5	4	3	2	1	0
5.	My daily life has been filled with things that interest me	5	4	3	2	1	0

11. Do you have any physical disability?

- a) I don't have any physical disability
- b) Visual impairment, specify \_\_\_\_\_
- c) Hearing impairment, specify \_\_\_\_\_
- d) Mobility impairment, specify \_\_\_\_\_
- e) Head injury, specify \_\_\_\_\_
- f) Other, specify \_\_\_\_\_

12. Do you suffer from any chronic illness, discomfort resulting from an accident, handicap or any other long-term health problems? (Please check all that apply)

- a) I don't have any chronic illness
- b) Allergy
- c) Asthma
- d) Diabetes
- e) Epilepsy
- f) Backaches, headaches (incl. migraine), stomachaches
- g) Heart disease (incl. arrhythmias)
- h) Scoliosis
- i) Eating disorder (anorexia or bulimia)
- j) Sleeping disorder
- k) Other \_\_\_\_\_

13. Overall, how would you describe your state of health these days? Would you say it is:

- a) Very good
- b) Good
- c) Fair
- d) Poor
- e) Very poor

During the past two weeks, how have you been feeling? (Chose ONE answer for each question from 14 to 33)	
<p>14.</p> <ul style="list-style-type: none"> <li>a) I do not feel sad.</li> <li>b) I feel sad.</li> <li>c) I am sad all the time and I can't snap out of it.</li> <li>d) I am so sad and unhappy that I can't stand it.</li> </ul>	<p>15.</p> <ul style="list-style-type: none"> <li>a) I am not particularly pessimistic or discouraged about the future.</li> <li>b) I feel discouraged about the future.</li> <li>c) I feel I have nothing to look forward to.</li> <li>d) I feel that the future is hopeless and that things cannot improve.</li> </ul>
<p>16.</p> <ul style="list-style-type: none"> <li>a) I do not feel like a failure.</li> <li>b) I feel I have failed more than the average person.</li> <li>c) As I look back on my life all I can see is a lot of failures.</li> <li>d) I feel I am a complete failure as a person.</li> </ul>	<p>17.</p> <ul style="list-style-type: none"> <li>a) I get as much satisfaction out of things as I used to.</li> <li>b) I don't enjoy things the way I used to.</li> <li>c) I don't get satisfaction out of anything any more.</li> <li>d) I am dissatisfied with everything.</li> </ul>



<p><b>18.</b></p> <p>a) I don't feel particularly guilty.  b) I feel guilty a good part of the time.  c) I feel quite guilty most of the time.  d) I feel guilty all of the time.</p>	<p><b>19.</b></p> <p>a) I don't feel I am being punished.  b) I feel I may be punished.  c) I expect to be punished.  d) I feel I am being punished.</p>
<p><b>20.</b></p> <p>a) I don't feel disappointed in myself.  b) I am disappointed in myself.  c) I am disgusted with myself.  d) I hate myself.</p>	<p><b>21.</b></p> <p>a) I don't feel I am any worse than anybody else.  b) I am critical of myself for my weaknesses or mistakes.  c) I blame myself all the time for my faults.  d) I blame myself for everything bad that happens.</p>
<p><b>22.</b></p> <p>a) I don't have any thoughts of harming myself.  b) I have thoughts of harming myself but I would not carry them out.  c) I would like to kill myself.  d) I would kill myself if I had the chance.</p>	<p><b>23.</b></p> <p>a) I don't cry more than usual.  b) I cry more now than I used to.  c) I cry all the time now. I can't stop it.  d) I used to be able to cry but now I can't cry at all even though I want to.</p>
<p><b>24.</b></p> <p>a) I am no more irritated by things than I ever was.  b) I am slightly more irritated now than usual.  c) I am quite annoyed or irritated a good deal of the time.  d) I feel irritated all the time.</p>	<p><b>25.</b></p> <p>a) I have not lost interest in other people.  b) I am less interested in other people than I used to be.  c) I have lost most of my interest in other people and have little feeling for them.  d) I have lost all interest in other people and don't care about them at all.</p>
<p><b>26.</b></p> <p>a) I make decision about as well as ever.  b) I am less sure of myself now and try to put off making decisions.  c) I can't make any decisions without help.  d) I can't make any decisions at all.</p>	<p><b>27.</b></p> <p>a) I don't feel I look worse than I used to.  b) I am worried that I am looking old or unattractive.  c) I feel that there are permanent changes in my appearance and they make me look unattractive.  d) I feel that I am ugly or repulsive looking.</p>
<p><b>28.</b></p> <p>a) I can sleep as well as usual.  b) I don't sleep as well as I used to.  c) I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.  d) I wake up several hours earlier than I used to and cannot get back to sleep.</p>	<p><b>29.</b></p> <p>a) I can work about as well as before.  b) It takes an extra effort to get started at doing something.  c) I have to push myself very hard to do anything.  d) I can't do any work at all.</p>
<p><b>30.</b></p> <p>a) I don't get any more tired than usual.  b) I get tired more easily than I used to.  c) I get tired from doing anything.  d) I get too tired to do anything.</p>	<p><b>31.</b></p> <p>a) My appetite is no worse than usual.  b) My appetite is not as good as it used to be.  c) My appetite is much worse now.  d) I have no appetite at all any more.</p>
<p><b>32.</b></p> <p>a) I haven't lost much weight, if any, lately.  b) I have lost more than 2 kilograms.  c) I have lost more than 4 kilograms.  d) I have lost more than 6 kilograms.</p>	<p><b>33.</b></p> <p>a) I am no more worried about my health than usual.  b) I am worried about physical problems like aches, pains, upset stomach, or constipation.  c) I am very worried about physical problems and it's hard to think of much else.  d) I am so worried about my physical problems that I cannot think of anything else.</p>

Please put X in the box which is most relevant to you

	Never	Rarely	Sometimes	Often	Very often	Always
<b>34. Have you ever felt that life was not worth living?</b>	0	1	2	3	4	5
<b>35. Have you ever wished you were dead? - For instance, that you could go to sleep and not wake up</b>	0	1	2	3	4	5
<b>36. Have you ever thought of taking your life, even if you would not really do it?</b>	0	1	2	3	4	5
<b>37. Have you ever reached the point where you seriously considered taking your life or perhaps made plans how you</b>	0	1	2	3	4	5

would go about doing it?						
38. Have you ever made an attempt to take your life?	0	1	2	3	4	5

39. How tall are you (answer in centimetres)? \_\_\_\_\_

40. How much do you weigh (answer in kilograms)? \_\_\_\_\_

41. For each item, please pick one number that best describes how you act and think in different situations				
	Rarely/Never	Occasionally	Often	Almost always/ Always
1. I plan tasks carefully	1	2	3	4
2. I do things without thinking.	1	2	3	4
3. I make-up my mind quickly.	1	2	3	4
4. I am happy-go-lucky	1	2	3	4
5. I don't "pay attention."	1	2	3	4
6. I have "racing" thoughts.	1	2	3	4
7. I plan trips well ahead of time.	1	2	3	4
8. I am self controlled.	1	2	3	4
9. I concentrate easily.	1	2	3	4
10. I save regularly.	1	2	3	4
11. I "squirm" at plays or lectures.	1	2	3	4
12. I am a careful thinker.	1	2	3	4
13. I plan for job security.	1	2	3	4
14. I say things without thinking.	1	2	3	4
15. I like to think about complex problems.	1	2	3	4
16. I change jobs.	1	2	3	4
17. I act "on impulse".	1	2	3	4
18. I get easily bored when solving thought problems.	1	2	3	4
19. I act on the spur of the moment.	1	2	3	4
20. I am a steady thinker.	1	2	3	4
21. I change residences.	1	2	3	4
22. I buy things on impulse.	1	2	3	4
23. I can only think about one thing at a time.	1	2	3	4
24. I change hobbies.	1	2	3	4
25. I spend or charge more than I earn.	1	2	3	4
26. I often have extraneous thoughts when thinking.	1	2	3	4
27. I am more interested in the present than the future.	1	2	3	4
28. I am restless at the theater or lectures	1	2	3	4
29. I like puzzles.	1	2	3	4
30. I am future oriented.	1	2	3	4

42. Please, for each item mark how you felt in the past month by checking the box for 'Never', 'Almost never', 'Sometimes', 'Fairly often' and 'Very often'.					
	Never	Almost never	Sometimes	Fairly often	Very often
1. In the past month, how often have you been upset because of something that happened unexpectedly?	0	1	2	3	4
2. In the past month, how often have you felt unable to control the important things in your life?	0	1	2	3	4
3. In the past month, how often have you felt nervous or stressed?	0	1	2	3	4
4. In the past month, how often have you felt confident about your ability to handle personal problems?	0	1	2	3	4
5. In the past month, how often have you felt that things were going your way?	0	1	2	3	4
6. In the past month, how often have you found that you could not cope with all the things you had to do?	0	1	2	3	4

<b>7. In the past month, how often have you been able to control irritations in your life?</b>	0	1	2	3	4
<b>8. In the last month, how often have you felt that you were on top of things?</b>	0	1	2	3	4
<b>9. In the last month, how often have you been angered because of things that happened that were outside of your control?</b>	0	1	2	3	4
<b>10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?</b>	0	1	2	3	4

**43. Using the 5-point scale shown below, indicate how uncharacteristic or characteristic each of the following statements is in describing you.**

	Very unlike me	Somewhat unlike me	Neither unlike, nor like me	Somewhat like me	Very like me
1. Given enough provocation, I may hit another person.	1	2	3	4	5
2. I often find myself disagreeing with people.	1	2	3	4	5
3. At times I feel I have gotten a raw deal out of life.	1	2	3	4	5
4. There are people who have pushed me so far that we have come to blows.	1	2	3	4	5
5. I can't help getting into arguments when people disagree with me.	1	2	3	4	5
6. Sometimes I fly off the handle for no good reason.	1	2	3	4	5
7. Other people always seem to get the breaks.	1	2	3	4	5
8. I have threatened people I know.	1	2	3	4	5
9. My friends say that I'm somewhat argumentative.	1	2	3	4	5
10. I have trouble controlling my temper.	1	2	3	4	5
11. I wonder why sometimes I feel so bitter about things.	1	2	3	4	5
12. I sometimes feel like a powder keg ready to explode.	1	2	3	4	5

**44. For each item, please mark how you felt during the past two weeks by checking the box for 'Little or none of the time', 'Some of the time', 'A large part of the time' or 'Most of the time'**

	Little or none of the time	Some of the time	A large part of the time	Most of the time
1. I feel more nervous and anxious than usual	1	2	3	4
2. I feel afraid for no reason at all	1	2	3	4
3. I get upset easily or feel panicky	1	2	3	4
4. I feel like I'm falling apart and going to pieces	1	2	3	4
5. I feel that everything is all right and nothing bad will happen	1	2	3	4
6. My arms and legs shake and tremble	1	2	3	4
7. I am bothered by headaches, neck and back pains	1	2	3	4
8. I feel weak and get tired easily	1	2	3	4
9. I feel calm and can sit still easily	1	2	3	4
10. I can feel my heart beating fast	1	2	3	4
11. I am bothered by dizzy spells	1	2	3	4
12. I have or feels like I have fainting spells	1	2	3	4
13. I can breathe in and out easily	1	2	3	4
14. I have to urinate often	1	2	3	4
15. I am bothered by stomach aches or indigestion	1	2	3	4
16. I get feelings of numbness and tingling in my fingers and/or toes	1	2	3	4
17. My hands are usually warm and dry	1	2	3	4
18. My face gets hot and blushes	1	2	3	4

19. I fall asleep easily and get a good night's rest	1	2	3	4
20. I have nightmares	1	2	3	4

<b>45. During the past 6 months, when using the Internet for non-essential purposes (e.g. NOT academically, etc.), please answer the following questions by checking the box for 'Yes' or 'No' for each item.</b>		
	<b>YES</b>	<b>NO</b>
1. Do you feel preoccupied with the Internet (think about previous online activity or anticipate next online session)?	1	2
2. Do you feel the need to use the Internet with increasing amounts of time in order to achieve satisfaction?	1	2
3. Have you repeatedly made unsuccessful efforts to control, cut back, or stop Internet use?	1	2
4. Do you feel restless, moody, depressed, or irritable when attempting to cut down or stop Internet use?	1	2
5. Do you stay online longer than originally intended?	1	2
6. Have you jeopardized or risked the loss of significant relationship, job, or educational opportunity because of the Internet?	1	2
7. Have you lied to family members, therapist, or others to conceal the extent of involvement with the Internet?	1	2
8. Do you use the Internet as a way of escaping from problems or of relieving a dysphonic mood (e.g., feelings of helplessness, guilt, anxiety, or depression)?	1	2

**46. How many close friends do you have?** \_\_\_\_\_

**47. Did one or more of the following life events happen in your life during the past 6 months (please check all that apply)?**

- a) Death of close family member (parent, sibling)
- b) Death of close friend
- c) Parents got divorced or separated
- d) Quit school (cease to attend school or academic institution)
- e) Was arrested by the police
- f) Family member (other than yourself) had trouble with alcohol
- g) Got into drugs or alcohol
- h) Lost your job
- i) Broke up with a close boyfriend
- j) Parent lost a job
- k) Got badly hurt or sick
- l) Hassling with parents
- m) Hassling with brother or sister
- n) Physically attacked and hurt
- o) Experienced a very dangerous situation (flood, earthquake, car accident, etc.)
- p) Other, describe: \_\_\_\_\_

14. Сколько вам лет? \_\_\_\_\_

15. Укажите ваш пол?

- e) Мужской
- f) Женский
- g) Трансгендерный
- h) Другое \_\_\_\_\_

16. Укажите вашу сексуальную ориентацию:

- e) Традиционной сексуальной ориентации / Гетеросексуальный
- f) Гомосексуальный
- g) Бисексуальный
- h) Другое \_\_\_\_\_

17. Укажите вашу этническую группу:

- a) Казах
- b) Русский
- c) Узбек
- d) Украинец
- e) Киргиз
- f) Уйгур
- g) Татар
- h) Немец
- i) Кореец
- j) Другое \_\_\_\_\_
- k) Не знаю

18. Укажите ваш город проживания:

- u) Актау
- v) Алматы
- w) Астана
- x) Атырау
- y) Балхаш
- z) Караганда
- aa) Кокшетау
- bb) Костанай
- cc) Кызылорда
- dd) Павлодар
- ee) Петропавловск
- ff) Семипалатинск
- gg) Шымкент
- hh) Тараз
- ii) Темиртау
- jj) Туркестан
- kk) Уральск
- ll) Усть-Каменогорск
- mm) Жезказган
- nn) Другое \_\_\_\_\_

19. Укажите ваш уровень полученного образования?

- g) Школьное образование
- h) Колледж или эквивалент
- i) Степень бакалавра или эквивалент
- j) Степень магистра или эквивалент
- k) Степень доктора или эквивалент
- l) Другое \_\_\_\_\_

20. Укажите ваш ежемесячный доход:

- h) Менее 50 000 тенге
- i) 50 000 – 99 999 тенге
- j) 100 000 – 149 999 тенге
- k) 150 000 – 199 999 тенге
- l) 200 000 – 249 999 тенге
- m) 250 000 – 299 999 тенге
- n) 300 000 тенге или больше

21. Укажите вашу религию:

- a) Мусульманин
- b) Христианин
- c) Иудей
- d) Буддист
- e) Атеист
- f) Агностик
- g) Нерелигиозный
- h) Другое \_\_\_\_\_

22. В какой семье вы воспитывались:

- h) В традиционной семье
- i) Одним родителем (мать или отец)
- j) Бабушкой и дедушкой
- k) Иными родственниками
- l) В приемная семья
- m) В приюте/детском доме
- n) Другое \_\_\_\_\_

23. Пожалуйста, укажите, на каждое из пяти утверждений ниже какой ответ лучше всего характеризует Ваши чувства за последние две недели. Имейте в виду, что большее количество очков означают лучшее благосостояние.

	За последние две недели	Всегда	Большую часть времени	Больше половины времени	Меньше половины времени	Иногда	Никогда
1.	Я чувствовал себя бодро и в хорошем состоянии духа	5	4	3	2	1	0
2.	Я чувствовал себя спокойно и расслабленно	5	4	3	2	1	0
3.	Я чувствовал себя активно и энергично	5	4	3	2	1	0
4.	Я просыпался отдохнувшим и бодрым	5	4	3	2	1	0
5.	Моя повседневная жизнь была наполнена вещами, которые меня интересуют	5	4	3	2	1	0

24. Есть ли у вас инвалидность?

- g) У меня нет инвалидности
- h) Нарушение зрения, укажите \_\_\_\_\_
- i) Нарушение слуха, укажите \_\_\_\_\_
- j) Нарушение физической подвижности, укажите \_\_\_\_\_
- k) Травмы головы, укажите \_\_\_\_\_
- l) Другое, укажите \_\_\_\_\_

25. Есть ли у Вас хронические заболевания или дискомфорт в результате несчастного случая, недееспособности или других долгосрочных проблем со здоровьем (укажите все, что имеет отношение к Вам)

- l) У меня нет хронических заболеваний
- m) Аллергия
- n) Астма
- o) Сахарный диабет
- p) Эпилепсия
- q) Боли в спине, голове (включая мигрень), желудке
- r) Заболевания сердца (включая разные формы аритмии)
- s) Сколиоз
- t) Расстройства приема пищи (анорексия или булимия)
- u) Нарушения сна
- v) Другое \_\_\_\_\_

26. В целом, как Вы оцениваете свое здоровье в данное время? Считаете ли Вы, что Ваше здоровье:

- f) Очень хорошее
- g) Хорошее
- h) Нормальное
- i) Плохое
- j) Очень плохое

<b>В течение последних двух недель, как Вы себя чувствовали? (Выберите ОДИН ответ на каждый вопрос с 14 по 33)</b>	
<p><b>14.</b></p> <p>a) Я не чувствую грусти.  b) Мне грустно.  c) Мне грустно постоянно и я не могу вырваться из этого состояния.  d) Мне так грустно и несчастно, что я не могу это выдержать.</p>	<p><b>15.</b></p> <p>a) У меня нет особого пессимизма и уныния по поводу будущего.  b) Я чувствую уныние по поводу будущего.  c) Мне кажется, что мне не к чему стремиться.  d) Мне кажется, будущее безнадежно и все вокруг меня не может улучшиться.</p>
<p><b>16.</b></p> <p>a) Мне не кажется, что я неудачник.  b) Мне кажется я чаще терпел неудачи, чем люди в среднем.  c) Оглядываясь на свою жизнь, я вижу только множество неудач.  d) Мне кажется я полный неудачник как личность.</p>	<p><b>17.</b></p> <p>a) Я получаю удовольствие как и раньше.  b) Я уже не радуюсь явлениям и событиям так, как раньше.  c) Я уже не получаю удовлетворения ни от чего.  d) Я неудовлетворен всем.</p>
<p><b>18.</b></p> <p>a) Я не испытываю особого чувства вины.  b) Я чувствую себя виноватым достаточно часто.  c) Я чувствую себя виновным практически постоянно.  d) Я чувствую себя виновным постоянно.</p>	<p><b>19.</b></p> <p>a) Мне не кажется, что меня наказывают.  b) Мне кажется, что меня наказывают.  c) Я ожидаю быть наказанным.  d) Я чувствую, что меня наказывают.</p>
<p><b>20.</b></p> <p>a) У меня нет чувства неудовлетворенности собой.  b) Я разочарован собой.  c) Я сам себе отвратителен.  d) Я ненавижу себя.</p>	<p><b>21.</b></p> <p>a) Я не думаю, что я хуже, чем другие.  b) Я очень критичен к себе за слабость и ошибки.  c) Я виню себя за все свои ошибки.  d) Я виню себя за все, что идет не так.</p>
<p><b>22.</b></p> <p>a) У меня нет мыслей навредить себе.  b) У меня есть мысли навредить себе, но я бы никогда их не воплотил.  c) Я бы хотел убить себя.  d) Если бы я мог, я бы убил себя.</p>	<p><b>23.</b></p> <p>a) Я плачу не больше обычного.  b) Теперь я плачу больше, чем раньше.  c) Теперь я плачу постоянно. Я ничего не могу с этим по-делать.  d) Раньше я мог плакать, теперь, даже, если хочу, плакать совсем не могу.</p>
<p><b>24.</b></p> <p>a) Сейчас я не более раздражителен, чем обычно.  b) Сейчас я более раздражителен, чем обычно.  c) Я часто чувствую себя раздраженным.  d) Я постоянно чувствую себя раздраженным.</p>	<p><b>25.</b></p> <p>a) Я не потерял интереса к другим людям  b) Я менее заинтересован в других людях, чем раньше.  c) Я потерял большую часть своего интереса к другим людям и испытываю к ним очень мало чувств.  d) Я потерял весь интерес к другим людям и совершенно не думаю о том, как они.</p>
<p><b>26.</b></p> <p>a) Я принимаю решения также, как и раньше.  b) Я не так, как раньше уверен в себе и потому откладываю принятие решений.  c) Я не могу принимать решений без помощи.</p>	<p><b>27.</b></p> <p>a) Мне не кажется, что я выгляжу хуже, чем раньше.  b) Меня беспокоит, что я выгляжу старым и непривлекательным.</p>

d) Я вообще не могу принимать решения.	с) Мне кажется, что с моей внешностью произошли необратимые изменения и из-за них я чувствую себя непривлекательно. d) Мне кажется, что я выгляжу уродливо и отталкивающе.
<b>28.</b> а) Я сплю также хорошо, как и раньше. b) Я не сплю также хорошо, как и раньше. с) Я просыпаюсь за час-два до обычного времени и потом мне трудно заснуть обратно. d) Каждый день я просыпаюсь несколькими часами раньше и не могу заснуть обратно.	<b>29.</b> а) Я могу работать также хорошо, как и раньше. b) Мне требуются дополнительные усилия, чтобы что-то начать. с) Мне приходится себя сильно заставлять что-то делать. d) Я вообще работать не могу.
<b>30.</b> а) Я устаю не больше обычного. b) Сейчас я устаю быстрее, чем раньше. с) Я устаю от любого занятия. d) Я чувствую себя слишком усталым, чтобы чем-то заниматься.	<b>31.</b> а) Мой аппетит не хуже обычного. b) Мой аппетит не так хорош, как раньше. с) Сейчас мой аппетит стал гораздо хуже. d) У меня пропал всякий аппетит.
<b>32.</b> а) Если такое и было, то я особо много в весе за последнее время не терял. b) Я потерял в весе больше двух килограмм. с) Я потерял в весе больше четырех килограмм. d) Я потерял в весе больше шести килограмм.	<b>33.</b> а) Я не больше обычного обеспокоен своим здоровьем. b) Меня беспокоят боли и болевые ощущения, а также расстройства желудка и запоры, и прочие неприятные ощущения в теле. с) Я так беспокоюсь о том, как я себя чувствую и что я чувствую, что трудно думать о другом. d) Я полностью погружен в свои чувства и ощущения и не могу думать о другом.

**Пожалуйста, отметьте крестиком поля, которые больше всего соответствуют Вашему состоянию**

	<b>Ни разу</b>	<b>Редко</b>	<b>Иногда</b>	<b>Часто</b>	<b>Очень часто</b>	<b>Посто- янно</b>
<b>34.</b> Казалось ли Вам, что жизнь не стоит того, чтобы жить?	0	1	2	3	4	5
<b>35.</b> Хотели ли Вы, умереть? – Например, заснуть и не проснуться?	0	1	2	3	4	5
<b>36.</b> Думали ли Вы когда-нибудь о прекращении своей жизни, даже если бы Вы ничего для этого не сделали?	0	1	2	3	4	5
<b>37.</b> Доходили ли Вы когда-нибудь до такого состояния, когда серьезно обдумывали вопрос прекращения своей жизни или, может быть, планировали, как это сделать?	0	1	2	3	4	5
<b>38.</b> Вы когда-нибудь пытались прекратить свою жизнь?	0	1	2	3	4	5

**39.** Какой у Вас рост (в сантиметрах)? \_\_\_\_\_

**40.** Какой у Вас вес (в килограммах)? \_\_\_\_\_



**41. По каждому пункту отметьте цифру, которая лучше всего показывает, как Вы действуете и думаете в разных ситуациях**

	Редко/Никогда	От случая к случаю	Часто	Почти всегда/Всегда
1. Я тщательно планирую задания.	1	2	3	4
2. Я делаю дела, не думая.	1	2	3	4
3. Я быстро принимаю решения.	1	2	3	4
4. Я беззаботный человек.	1	2	3	4
5. Я «пропускаю все мимо своего внимания».	1	2	3	4
6. У меня мысли «обгоняют друг друга».	1	2	3	4
7. Я задолго начинаю планирование своих поездок.	1	2	3	4
8. Я контролирую себя.	1	2	3	4
9. Я легко концентрируюсь.	1	2	3	4
10. Я регулярно откладываю деньги.	1	2	3	4
11. Я «клюю носом» на лекциях и в игровых ситуациях.	1	2	3	4
12. Я все тщательно продумываю.	1	2	3	4
13. Я планирую обеспеченность работой.	1	2	3	4
14. Я говорю, не думая.	1	2	3	4
15. Мне нравится обдумывать комплексные проблемы.	1	2	3	4
16. Я меняю места работы.	1	2	3	4
17. Я действую «по импульсу».	1	2	3	4
18. Мне быстро надоедает решение мыслительных (логических) задач.	1	2	3	4
19. Я действую по обстановке.	1	2	3	4
20. Я устойчивый мыслитель.	1	2	3	4
21. Я меняю места жительства.	1	2	3	4
22. Я покупаю вещи импульсивно.	1	2	3	4
23. Я за раз могу думать только об одном.	1	2	3	4
24. Я меняю свои хобби.	1	2	3	4
25. Я трачу и обмениваю больше, чем зарабатываю.	1	2	3	4
26. Часто, когда я что-то обдумываю, меня посещают посторонние мысли.	1	2	3	4
27. Я больше заинтересован в настоящем, чем будущем.	1	2	3	4
28. В театрах или на лекциях, я не могу усидеть на месте.	1	2	3	4
29. Мне нравятся головоломки и задачи.	1	2	3	4
30. Я ориентирован на будущее.	1	2	3	4

**42. Пожалуйста, по каждому пункту отметьте, что Вы чувствовали в течение последнего месяца, – «Никогда», «Практически никогда», «Иногда», «Достаточно часто» и «Очень часто».**

	Никогда	Практически никогда	Иногда	Достаточно часто	Очень часто
1. За последний месяц как часто Вы расстраивались из-за чего-то, что	0	1	2	3	4

<b>случилось неожиданно?</b>					
<b>2. За последний месяц, как часто Вам казалось, что Вы не можете контролировать важные вещи в своей жизни?</b>	0	1	2	3	4
<b>3. За последний месяц, как часто Вы чувствовали себя нервно и в стрессовом состоянии?</b>	0	1	2	3	4
<b>4. За последний месяц, как часто Вы чувствовали себя уверенным в своей способности решить личные проблемы?</b>	0	1	2	3	4
<b>5. За последний месяц, как часто Вы чувствовали, что все происходит так, как надо Вам?</b>	0	1	2	3	4
<b>6. За последний месяц, как часто Вы находили, что не можете справиться со всеми делами?</b>	0	1	2	3	4
<b>7. За последний месяц, как часто Вы могли контролировать раздражение?</b>	0	1	2	3	4
<b>8. За последний месяц, как часто Вам казалось, что Вы были «на гребне волны»?</b>	0	1	2	3	4
<b>9. За последний месяц, как часто Вы злились из-за чего-то, что случилось вне Вашего контроля?</b>	0	1	2	3	4
<b>10. За последний месяц как часто Вам казалось, что трудности навалились на Вас и Вы не можете их преодолеть?</b>	0	1	2	3	4

<b>43. Используя 5-балльную шкалу, показанную ниже, укажите, как нехарактерно или характерно описание каждого из следующих утверждений.</b>					
	Очень нехарактерно для меня	Отчасти нехарактерно для меня	Затрудняюсь ответить	Отчасти характерно для меня	Очень характерно для меня
1. При достаточной провокации, я могу ударить человека.	1	2	3	4	5
2. Я часто не соглашаюсь с людьми.	1	2	3	4	5
3. Иногда мне кажется, что жизнь играет со мной в злую шутку	1	2	3	4	5
4. Случалось, что люди выводили меня из себя и это приводило к драке.	1	2	3	4	5
5. Я вступаю в спор, когда люди не соглашаются со мной.	1	2	3	4	5
6. Иногда я теряю контроль над собой без причины.	1	2	3	4	5

7. Мне кажется, что другим людям всегда везет.	1	2	3	4	5
8. Я угрожал людям, которых я знаю.	1	2	3	4	5
9. Мои друзья говорят, что я в какой то степени люблю поспорить.	1	2	3	4	5
10. Мне трудно контролировать свой характер.	1	2	3	4	5
11. Я задумываюсь, почему иногда я легко огорчаюсь по любому поводу.	1	2	3	4	5
12. Иногда я чувствую, что я вот-вот взорвусь.	1	2	3	4	5

<b>44. По каждому утверждению ниже, отметьте состояние своих чувств и переживаний за последние две недели, отмечая поля: «Мало или совсем никакого времени», «Некоторое время», «Немалую часть времени» и «Большую часть времени».</b>				
	<b>Малую часть времени/ Никогда</b>	<b>Иногда</b>	<b>Значительную часть времени</b>	<b>Большую часть времени</b>
1. Я чувствую себя более нервным и тревожным, чем обычно.	1	2	3	4
2. У меня есть беспричинное чувство страха.	1	2	3	4
3. Я легко расстраиваюсь или впадаю в панику.	1	2	3	4
4. Мне кажется я рассыпаюсь на кусочки.	1	2	3	4
5. Мне кажется, что все в порядке и ничего плохого не случится.	1	2	3	4
6. Мои руки и ноги дрожат и трясутся.	1	2	3	4
7. Меня изматывают боли в голове, шее и спине.	1	2	3	4
8. Я чувствую слабость и легко устаю.	1	2	3	4
9. Я чувствую спокойствие и легко могу спокойно сидеть.	1	2	3	4
10. Я чувствую, как быстро бьется мое сердце.	1	2	3	4
11. Я страдаю от приступов слабости.	1	2	3	4
12. Со мной случаются обмороки или мне кажется, что они сейчас наступят.	1	2	3	4
13. Я могу спокойно вдыхать и выдыхать.	1	2	3	4
14. Я часто справляю малую нужду.	1	2	3	4
15. Я страдаю от болей в животе или несварения.	1	2	3	4
16. У меня бывает оцепенение и покалывания пальцев рук и ног.	1	2	3	4
17. Руки у меня обычно теплые и сухие.	1	2	3	4
18. У меня лицо бывает красным и горящим.	1	2	3	4
19. Я легко засыпаю и хорошо отдыхаю за ночь.	1	2	3	4
20. У меня бывают кошмары.	1	2	3	4

<b>45. За последние 6 месяцев, как часто вы использовали интернет для неважных целей (например, не для учебы, работы и т.д.). Пожалуйста, ответьте на вопросы, отмечая «Да» или «Нет».</b>		
	<b>ДА</b>	<b>НЕТ</b>
1. Кажется ли Вам, что Вы поглощены интернетом (например обдумываете предыдущий сеанс пользования интернетом и ждете следующего выхода в интернет)?	1	2
2. Кажется ли Вам, чтобы достичь удовлетворения, Вам требуется больше времени проводить в интернете?	1	2
3. Приходилось ли Вам повторно и безуспешно пытаться контролировать, урезать или прекратить использование интернета?	1	2
4. Ощущаете ли Вы неусидчивость, плохое настроение, депрессию или раздражительность, когда Вам приходится сокращать или прекращать использование интернета?	1	2
5. Находитесь ли в онлайн режиме больше времени, чем было запланировано изначально?	1	2
6. Приходилось ли Вам рисковать ценными отношениями, работой или образовательными возможностями из-за пристрастия к интернету?	1	2
7. Приходилось ли Вам лгать членам семьи, врачам и другим людям с целью сокрытия масштаба Вашей зависимости от интернета?	1	2
8. Используете ли Вы интернет, чтобы убежать от проблем или облегчить свое дисфоническое на- строение (например чувства безнадежности, вины, тревоги и депрессии)?	1	2

**46. Скольких людей Вы считаете своими близкими друзьями?** \_\_\_\_\_

**47. Случались ли с Вами, за последние 6 месяцев следующие события (укажите все, которые имели место)?**

- a) Кончина близкого члена семьи (родителя, брата или сестры)
  - b) Кончина близкого друга
  - c) Развод родителей
  - d) Отказ от посещения школы (учебного заведения)
  - e) Арест и привод в полицию
  - f) У кого в семье (не у тебя) проблемы с алкоголем
  - g) Начало употребления алкоголя и наркотиков
  - h) Утеря работы
  - i) Разрыв отношений с близким другом
  - j) Кто-то из родителей потерял работу
  - k) Тяжело заболел или получил серьезную травму
  - l) Мелкие проблемы с родителями
  - m) Конфликты и ссоры с братом или сестрой
  - n) Нападение и избиение
  - o) Переживание очень опасной ситуации (наводнение, землетрясение, ДТП)
  - p) Другое,
- опишите: \_\_\_\_\_

## Appendix 2 – Informed consent



### Consent form

The aim of study is to investigate the prevalence of mental health problems and suicidality, and associated factors among gay and bisexual men in Kazakhstan.

Participation in the study is exclusively voluntary, and you have the right to discontinue survey at any time, which will not entail any negative consequences for you. The questionnaire contains such questions as: general demographic data; questions used to determine mental health problems and suicidality, and associated with them factors.

Participation in the study will take approximately 20 minutes. Please fill in the questionnaire yourself and do not discuss questions and answers with anyone.

From the questionnaire, it will be impossible to identify your personality; moreover, you will not need to put in your surname, first name, patronymic or signature anywhere. Thus, all information is anonymous. Completed online forms will be saved in a personal computer of the principal investigator of the study after the survey. The study is anonymous, and any opportunity to link your personal information with your application form is excluded, and results will be reported in aggregated form without any potential hazard to participants.

There is no potential psychological, physical or emotional hazard for you. There are no direct benefits for you, although the results of the research may contribute in further policies on improving the mental health among gay and bisexual men in Kazakhstan.

Responsible for this project is Azamat Seksenbayev, [azamat.seksenbayev@nu.edu.kz](mailto:azamat.seksenbayev@nu.edu.kz),  
phone number 8 777 540 25 07

The project is monitored by:

Dr. Byron Crape [byron.crape@nu.edu.kz](mailto:byron.crape@nu.edu.kz)

This study was reviewed and agreed upon by the Nazarbayev University School of Medicine Research Ethics Committee. If you have questions or complaints about your rights as a

research participant or how the study was conducted, you can contact Nazarbayev University School of Medicine Research Ethics Committee. E-mail: nusom-rec@nu.edu.kz

Having started filling out this survey, you confirm that you understand the information, and give your consent to participate in the study.

**Thank you!**

### Информированное согласие

Данный проект изучает расстройства психического здоровья и суицидальность, а также их распространенность и связанные с ними факторы среди людей с гомосексуальной и бисексуальной ориентациями в Казахстане.

Участие в исследовании является исключительно добровольным, и Вы имеете право прекратить участие в любой момент, что не повлечет за собой никаких отрицательных для Вас последствий. Анкета содержит такие вопросы как: общие демографические данные; вопросы, используемые для определения расстройства психического здоровья и суицидальности, а также их распространенности и связанные с ними факторы.

Участие в исследовании займет приблизительно 20 минут. Просьба заполнять анкету самостоятельно и ни с кем не обсуждать вопросы и ответы.

Из вопросника никоим образом невозможно будет идентифицировать Вашу личность, более того Вам нигде не надо будет указывать фамилию, имя и отчество или подпись. Таким образом, вся информация анонимна. Заполненные онлайн анкеты будут храниться в персональном компьютере у руководителя исследования после проведения опроса. Исследование анонимно, и исключается любая возможность связать Вашу личную информацию с Вашей анкетой, а результаты исследования будут представлены в агрегированной форме без какой-либо потенциальной опасности для Вас.

Для Вас как участника исследования нет потенциальной психологической, физической или эмоциональной опасности. Нет никаких прямых выгод для Вас, хотя результаты исследования могут способствовать дальнейшей политике улучшения психического здоровья среди людей с гомосексуальной и бисексуальной ориентациями в Казахстане.

Ответственным за этот проект является Азамат Сексенбаев [azamat.seksenbayev@nu.edu.kz](mailto:azamat.seksenbayev@nu.edu.kz), номер телефона 8 777 540 25 07

Проект контролируется:

Др. Байрон Крэйп [byron.crape@nu.edu.kz](mailto:byron.crape@nu.edu.kz)

Данное исследование было рассмотрено и согласовано Комитетом по Исследовательской Этике Школы Медицины Назарбаев Университета. Если у Вас есть вопросы или жалобы по поводу ваших прав в качестве участника исследования или о том, как проводилось исследование, Вы можете обратиться в Комитет по Исследовательской Этике Школы Медицины Назарбаев Университета. Электронный адрес: nusom-rec@nu.edu.kz

Начав заполнение данного опроса, Вы подтверждаете, что Вы поняли информацию, и даёте свое согласие участвовать в исследовании.

**Спасибо!**