

Questionnaire Based Study about Association between Blood Oxygen Level and Mysophobia

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ABSTRACT

Blood oxygen level has optimum range from 75-100 mm Hg. Any individual having SpO₂ level under 60 mm Hg is considered as suffering from hypoxemia. Blood oxygen level can be measured either by ABG-Test (arterial-blood gas) or through a small device known as pulse oximeter. Pulse oximeter measures SpO₂ level from extremities e.g. fingertip, earlobe. Mysophobia commonly referred as germophobia is ranked at 5th position in the Diagnostic and Statistical Manual of Mental Disorder (DSM). Any individual suffering from germophobia have fear of germs and contamination. Symptoms in germophobia involve excessively washing hands, use of sanitizers/antibiotics and avoiding crowded places perceived to fear of germs exposure. Basic purpose of this study was to check the relationship between blood oxygen level and germophobia. 200 individuals were questioned about their physical state of germophobia either they are germaphobe or not. t-test was performed to check the association while p<0.05 was considered as significant level. Analysis of collected data shows that there is no significant association between blood oxygen level and germophobia.

Introduction

Optimum level of arterial oxygen in a healthy individual ranges from 75-100 millimeter of mercury (mm Hg). Any individual with oxygen level under 60 mm Hg is suffering from hypoxemia. Hypoxemia is related to low oxygen level in blood especially in arteries, that results in trouble breathing and nausea. Blood oxygen level can be measured by Arterial-Blood Gas Test (ABG-Test). ABG test measures the level of oxygen and carbon dioxide by taking blood sample from arteries. Sometimes the ABG- test can be difficult to do at home therefore, a small device known as pulse oximeter is commonly used. Pulse oximeter is a small clip like device that does not require blood samples, it measures the oxygen level with special sensors when attached to fingertip, toe or ear lobe [1]. Although pulse oximeter is easy to use and very convenient but it is less accurate than ABG as it measure the saturation of peripheral oxygen (SpO₂) from extremities, results may differ due to external factors e.g. poor circulation, dirty fingers, nail polish and standing position [2]. Normal SpO₂ level measured by pulse oximeter ranges from 95-100%, while individuals with less than 90% are considered with lower oxygen level or suffering from hypoxemia [3].

Mysophobia sometimes also referred as germophobia, verminophobia and germaphobia is the distress about germs and contamination. Germophobia falls at fifth position in the Diagnostic and Statistical Manual of Mental Disorder (DSM) [4]. In 1879, William A. Hammond first time used the terminology germophobia while observing obsessive-compulsive disorder (OCD) of washing hands among his patients [5]. While being a germaphobe not certainly mean that individual is suffering from OCD until diagnosed with excessive and unreasonable standards of hygienic environment [6]. An individual is regarded as germaphobe if DSM-5 lasts for a period of 6 months or more. Social Phobia Inventory (SPIN) questionnaire is used to identify phobias [7]. Symptoms related to germophobia includes intensive fear of germs and being contaminated that disturb psychological health [8]. Behavioral symptoms include excessively washing hands, use of sanitizers/antibiotics and avoiding crowded places perceived to fear of germs exposure [9].

Common physical symptoms examined in an individual suffering from germophobia are rapid heartbeat, difficulty in breathing, muscle tension and sometime chills. Genetic linkage of family history, environment issues, brain health and many other factors are

believed to be the main sources of germophobia [10]. Purpose of this study was to evaluate the effect of germophobia on normal oxygen level (SpO₂). To check the correlation between germophobia and saturation of peripheral oxygen that will help in estimating the body response against germophobia.

Materials and Methods

Project Design

A questionnaire was designed to check the correlation between germophobia and blood oxygen level. 200 individuals from IMBB (Institute of Molecular Biology & biotechnology) department of Bahauddin Zakariya University were questioned either they are suffering from germophobia or not. Their blood oxygen level was measured by pulse oximeter device, it checks the saturation of peripheral oxygen (SpO₂) from fingertip. SpO₂ level was examine in both male and female individuals.

Measurement of Peripheral Oxygen Saturation

Saturation of peripheral oxygen (SpO₂) was measured in the blood by the pulse oximeter. It can be calculated with pulse oximetry according to the following formula:

$$S_pO_2 = \frac{HbO_2}{HbO_2 + Hb}$$

HbO₂ is oxygenated hemoglobin and Hb is deoxygenated hemoglobin

Table 1: Association between blood oxygen level (Mean ± S.D) and mysophobia.

Gender	Germaphobe	Non-germaphobe	p-value
Male	96 ± 5.283	97.7 ± 2.410	0.13
Female	95.96 ± 7.210	95.14 ± 5.912	0.46
Both	95.97 ± 6.60	95.57 ± 5.555	0.65

Note: Non-significant (where p>0.05).

Table 2: Percentage of mysophobic and non-mysophobic individuals.

Gender	Yes	NO
Male	83.3%	16.7%
Female	65%	35%
Total	70.5%	29.5%

Note: Non-significant (where p>0.05).

Conclusion

In this study a correlation between mysophobia and blood oxygen level was measured. 200 individuals were questioned either they have germophobia or not, while their oxygen level was measured by pulse oximeter. Analysis and prediction of collected data shows that there is no significant association between germophobia and blood oxygen level. It shows that blood oxygen level have no clear impact on the germophobia as the calculated p-value was greater than 0.05, a standard value of significance.

Statistical Analysis

M Stat software was used to analyze the results. Student's t-test was performed. p<0.05 was considered as significant.

Results and Discussion

The correlation between peripheral oxygen saturation and germophobia is shown in Table 1. T-test was performed to check the impact of mysophobia on blood oxygen level. 200 individuals were questioned while the p-value less than 0.05 was considered as significant. Analysis of collected data presents that there is no impact of blood oxygen level on the germophobia. p-value of the collected data for both male and female was greater than 0.05, which characterizes that it is non-significant. Out of 200 individuals there were 60 males and 140 females. Fifty male out of 60 individuals were germaphobe while 10 were not suffering from germophobia. 91 female out of 140 had fear of germs, while 49 were non-germaphobe. Among 200 individuals, 141 have germophobia while 59 were normal. 83.3% males and 65% females said that they are germaphobe, while 16.7% male and 35% female said that they are non germaphobe. Out of 100, total 70.5% individuals said they are germaphobe while 59% are not. p-value for male, female and both was 0.13, 0.46 and 0.65 respectively which is greater than significant value of 0.05, hereafter shows that results are non-significant for both male and female categories. Percentage of mysophobic and non-mysophobic individuals is shown in Table 2.

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