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MENTAL HEALTH AND LIFESTYLE MODIFICATIONS AMONG HEALTHCARE WORKERS DURING COVID-19 PANDEMIC, HYDERABAD, INDIA

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Abstract:
Background: *Covid-19 has the potential to significantly affect the mental health of healthcare workers (HCW's), who stand in the frontline of this crisis. This study aims to assess mental health and lifestyle changes among HCW's with the objectives to assess and compare levels of Anxiety among Medical & Non-Medical HCW's and among Front-line HCW's with Second-line HCW's; know lifestyle changes among HCW's; know frequency of use of Stress relieving and Immunity boosting foods during Covid-19 outbreak.*
Methodology*: A cross-sectional partially online survey carried out among 199 HCW's with the help of an online semi-structured questionnaire which was shared through social media. Study participants were divided into Medical and Non-Medical HCW's. Data collected was then analysed using Chi-Square Test and Kruskal-Wallis Test.*
Results: *51.75% of total participants reported to have Mild symptoms of Anxiety and 36.1% reported Minimal or No Anxiety, 7.53% and 4.52% showed symptoms of Moderate and Mild Anxiety respectively. Front-line HCW's have shown minimal, mild and severe anxiety symptoms. Moderate anxiety symptoms were relatively higher in Second-line HCW's. Majority of HCW's reported decreased smoking and alcohol consumption and decreased sleep and exercise. They reported increased consumption of citrus fruits, Spices like ginger, garlic, turmeric and teas/concoctions during pandemic. The commonly reported viands for relieving stress by HCW's were Hot-water, turmeric milk, kadha, tea, protein-rich diet and Black seeds.*
Conclusion: *Medical HCW's have shown more Anxiety symptoms compared to Non-Medical HCW's. The risk perception of Covid-19 was higher in Medical HCW's and females compared to non-medical HCW's and Men. The lifestyle changes were equivalently positive, negative and unchanged.*
Key words*: HCW's; Medical and Non-Medical HCW's; Lifestyle; Generalised Anxiety Disorder Scale (GAD)-7.*

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INTRODUCTION:

Lower respiratory-tract infections are the communicable diseases with the highest mortality worldwide remaining a challenge to the global health community [1].

Corona Virus: On 31 December 2019 WHO was informed of cases of pneumonia of unknown cause in Wuhan, China. A novel coronavirus was identified as the cause by Chinese authorities on 7 January 2020 which was subsequently named as the "COVID-19 virus". On 11 March 2020, the outbreak was declared as *Pandemic*. [2]

Transmission: This virus spreads via human-to-human transmission which can be through various routes like droplets of saliva or discharge from nose when an infected person coughs or sneezes, direct and indirect contact. [3]

Statistics: Globally, as of 11:51am CEST, 21 April 2021, there have been 142,238,073 confirmed cases of COVID-19, including 3,032,124 deaths, reported to WHO. In India, from 3 January 2020 to 11:51am CEST, 21 April 2021, there have been 15,616,130 confirmed cases of COVID-19 with 182,553 deaths, reported to WHO [4] and in Telangana, total 367901 confirmed cases with 46488 active cases 1876 death have been reported as of *April 20, 2021* 8:00 pm IST [5]

Mental Health of HCW's: Covid-19 has caused a notable distress around the globe. Studies have shown marked mental health disturbances among HCW's during the pandemic, [6] [7] [8] [9] more severe symptoms were seen in females, nurses and front-line HCW's.[6] [8] [10]

Impact on Lifestyle: Studies reported the Pandemic had negative effects on lifestyle including anxiety, stress, reduced physical activity, Sleep, Alcohol and diet, with a consequent low intake of vitamins and antioxidants which is the principal weapon to fight off infections. [11] [12]

The Indian government released a set of guidelines, developed based on the opinion of 16 eminent vaidyas, in response to Covid-19 pandemic which include drinking warm water throughout the day, use of specific spices (turmeric, coriander, cumin, garlic, drinking herbal tea made from tulsi (basil), cinnamon, black pepper, ginger, raisins & drinking golden milk (hot milk with turmeric) once or twice a day.[13]

METHODOLOGY:

Study Sample: A cross-sectional study was carried out partially online and partially by personal interviews among 199 HCW's working in hospitals of Hyderabad. An online semi-structured questionnaire was developed using google forms and a consent form was attached to it. The link to the online survey was shared through social media i.e., WhatsApp and Instagram. Personal interviews were also carried out by strictly following the Covid-19 precautionary measures. Participants were divided into Medical (Doctors, Nurses) and Non-Medical HCW's (pharmacists, administrators and allied healthcare professionals) to compare their Anxiety levels during Covid-19 pandemic.

Inclusion Criteria: HCW's working in Hospitals of Hyderabad, Telangana, India during Covid-19 pandemic.

Exclusion Criteria: HCW's not working in Hospitals of Hyderabad, Telangana, India during Covid-19 pandemic.

Questionnaire: The self-reported questionnaire contained four parts i.e., basic demographic details, risk perception of Covid-19 among HCW's, Generalized Anxiety Disorder Scale (GAD-7), and the lifestyle and dietary changes adapted by the HCW's.

Generalised Anxiety Disorder-7 (GAD-7) Scale: The Generalised Anxiety Disorder Scale (GAD-7) is a 7-item self-rated screening tool developed as a severity indicator for generalised anxiety disorder by Spitzer et.al. It asks how frequently participants have suffered from different symptoms of anxiety in the previous 2 weeks symptoms include 'Feeling nervous, anxious, or on edge' and 'Feeling afraid, as if something awful might happen'. These items are rated on a 4-point Likert-type scale ranging from 0 (not at all) to 3 (nearly everyday). Total scores range from 0 to 21, with higher scores stipulating greater anxiety. The total scores are often categorised into four levels of severity: minimal:0–4, mild:5–9, moderate:10–14 and severe:15–21. A score of 10 or higher signifies a higher degree of anxiety [14].

Statistical Analysis: Data analysis was done using SPSS, with statistical significance limit set at $p < 0.05$. The data collected was analysed using Chi-Square Test and Kruskal-Wallis Test.

RESULTS AND DISCUSSION:

1. BASIC DATA:

Results have shown that of total participants (n=199), 45.22% (n=90) were males and 54.77% (n=109) were females. 47.73% (n=90) of them were Medical and 57.26% (n=109) of them were non-medical healthcare workers.

Marital status:

95 of total HCW's (n=199) were Married and 104 of them were Unmarried.

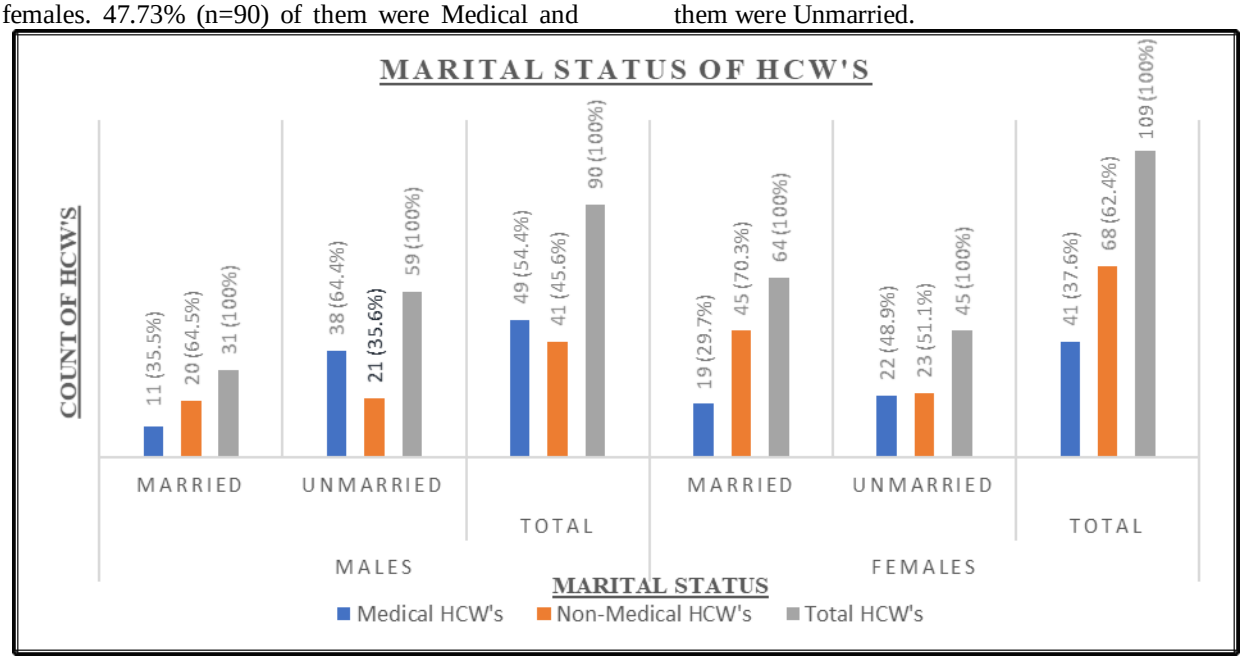

Figure 1.1: Marital status of Medical and Non-Medical HCW's.

Figure 1.1 depicts that Majority of Male (64.5%) and Female (70.3%) Non-Medical healthcare workers were married whereas fewer Male (35.5%) and Female (29.7%) Medical healthcare workers were married.

Table 1.1: Chi-Square Tests for Marital status

Gender		Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Male	Pearson Chi-Square	6.854[a]	1	.009*		
	Continuity Correction[b]	5.738	1	.017*		
	Likelihood Ratio	6.907	1	.009*		
	Fisher's Exact Test				.014*	.008*
	Linear-by-Linear Association	6.778	1	.009*		
	N of Valid Cases	90				
Female	Pearson Chi-Square	4.151[c]	1	.042*		
	Continuity Correction[b]	3.373	1	.066		
	Likelihood Ratio	4.138	1	.042*		
	Fisher's Exact Test				**.047**	**.033**
	Linear-by-Linear Association	4.113	1	.043*		
	N of Valid Cases	109				

Table 1.1 shows statistically there is a strong linear dependence among these variables. All the chi-square values are statistically significant since p values are <0.05 except continuity correction in females.

Exposure of HCW's to Covid-19 patients:
Of total participants 112 (56.28%) were Front-line healthcare workers and 87 (43.7%) were Second-line healthcare workers.

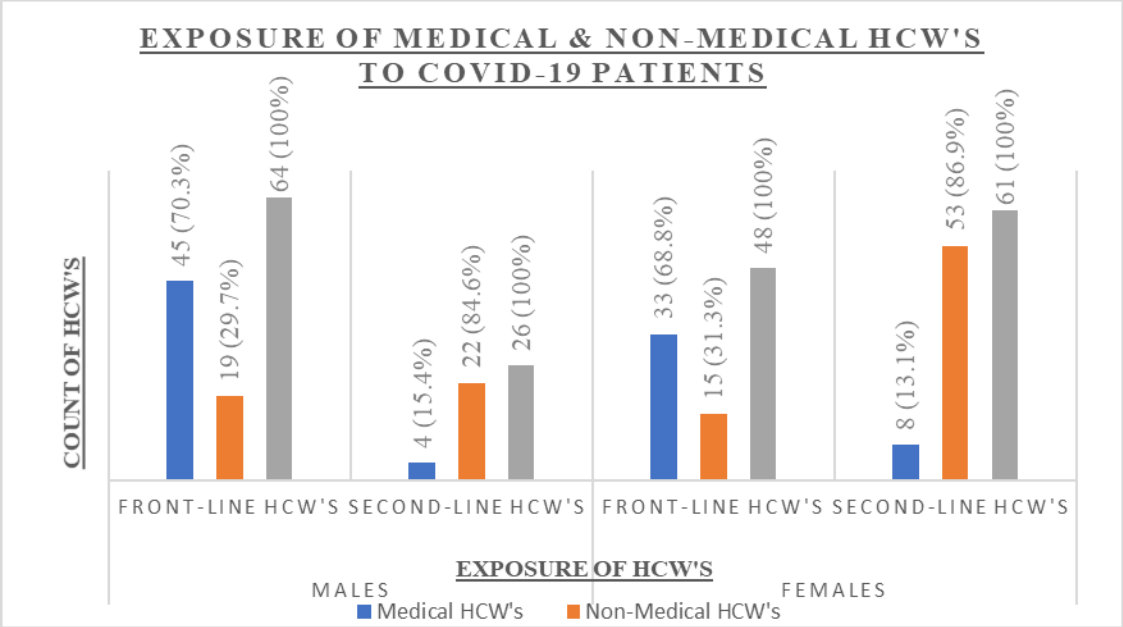

Figure 1.2: Exposure of Medical and Non-Medical HCW's to Covid-19 patients.

Figure 1.2 shows Majority of Non-Medical Male and Female HCW's, 84.6% and 86.9% respectively were Second-line HCW's i.e. did not directly treat Covid-19 patients and Male and Female Medical HCW's, 70.3% and 68.8% respectively were Front-line HCW's i.e. dealt directly with Covid-19 patients, whereas fewer Medical HCW's were second-line HCW's and Non-Medical HCW's were First-line HCW's.

Table 1.2: Chi-Square Tests for line of treatment

Gender		Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Males	Pearson Chi-Square	22.491[a]	1	**.000***		
	Continuity Correction[b]	20.331	1	**.000***		
	Likelihood Ratio	23.881	1	**.000***		
	Fisher's Exact Test				**.000***	**.000***
	Linear-by-Linear Association	22.241	1	**.000***		
	N of Valid Cases	90				
Females	Pearson Chi-Square	35.433[c]	1	**.000***		
	Continuity Correction[b]	33.102	1	**.000***		
	Likelihood Ratio	37.319	1	**.000***		
	Fisher's Exact Test				**.000***	**.000***
	Linear-by-Linear Association	35.108	1	**.000***		
	N of Valid Cases	109				

Mean rank of Medical HCW's is 69.77 and non-medical HCW's is 124.96. Table 1.2 shows statistically the linear dependence of these variables is extremely strong and all p values of chi square tests are 0.000 advocating strong significance of variables

2. RISK PERCEPTION OF COVID-19:

2.1 Worry of getting Infected with Covid-19:

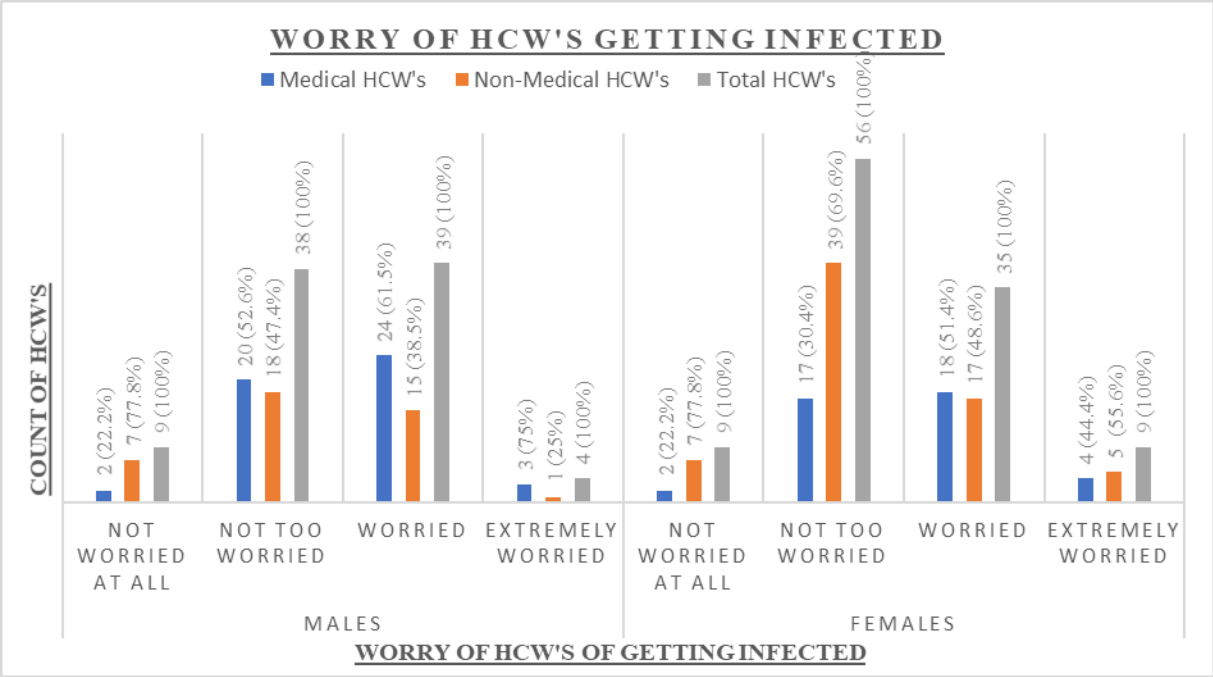

Fig. 2.1 Worry of Medical and Non-Medical HCW's of getting infected/reinfected

Upon asking "are you worried of getting infected with Covid-19?", it was shown that **medical healthcare workers were more worried when compared to non-medical healthcare workers.** Majority of male and female non-medical healthcare workers (77.8%) each reported to be "not worried at all" whereas 75% of Male Medical healthcare workers and 25% of Male Non-Medical healthcare workers reported that they were "extremely worried" (Figure 2.1)

Table 2.1: Chi-Square Tests for worry of getting infected/reinfected

Gender		Value	Df	Asymp. Sig. (2-sided)
Males	Pearson Chi-Square	5.291[a]	3	.152
	Likelihood Ratio	5.477	3	.140
	Linear-by-Linear Association	4.444	1	**.035***
	N of Valid Cases	90		
Females	Pearson Chi-Square	5.191[b]	3	.158
	Likelihood Ratio	5.204	3	.157
	Linear-by-Linear Association	3.765	1	**.052***
	N of Valid Cases	109		

Mean rank of Medical HCW's is 112.13 and non-medical HCW's is 89.99. Table 2.1 shows statistically the linear dependence among these variables is strong and the chi square values are not significant as the p value is not <0.05 which shows that these variables are independent of each other.

2.2 Worry of infecting your family members:

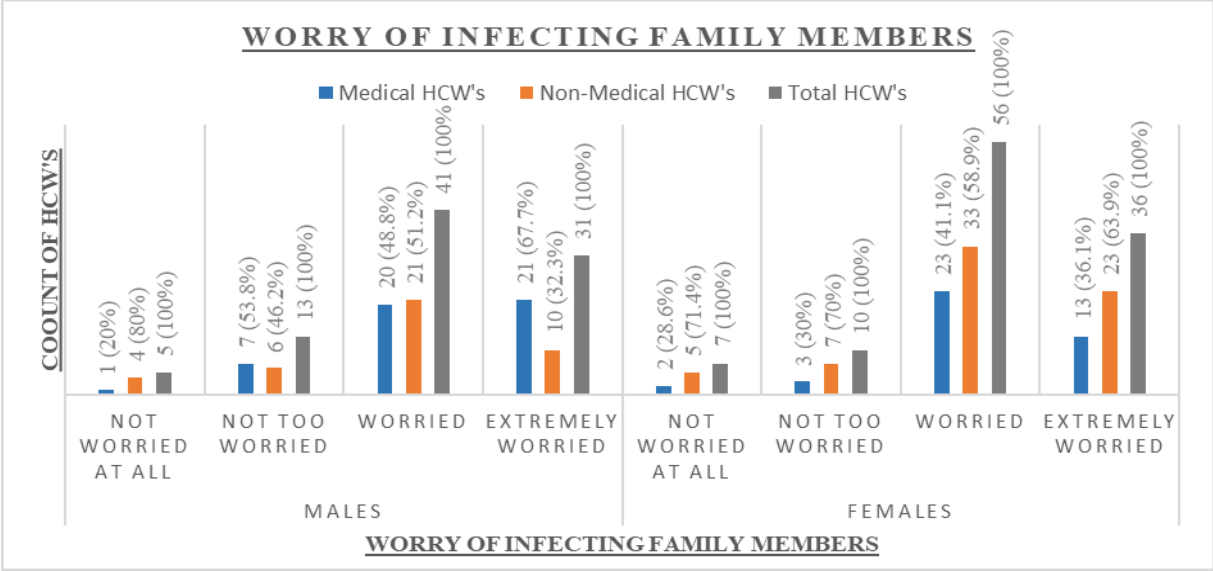

Figure 2.2: Worry of Medical and Non-Medical HCW's of infecting their Family Members

Figure 2.2 shows medical healthcare workers were more worried of infecting their family members when compared to non-medical healthcare workers.

Most of the Non-medical male (80%) and female (71.4%) healthcare workers and fewer medical male (20%) and female (28.6%) healthcare workers reported "not worried at all" whereas most of the Male medical healthcare workers (67.7%) and fewer male (32.3%) non-medical healthcare workers reported that they were "extremely worried"

Mean rank of Medical HCW's is 105.73 and non-medical HCW's is 95.27. The Chi-square vales for males is 5.134[a] and for females is .811[b]. Statistically there is no linear association between these variables and the p values are not <0.05% advocating that they are not significant and the variables are independent of each other.

2.3 Worry of being Infected when Covid-19 related symptoms appear:

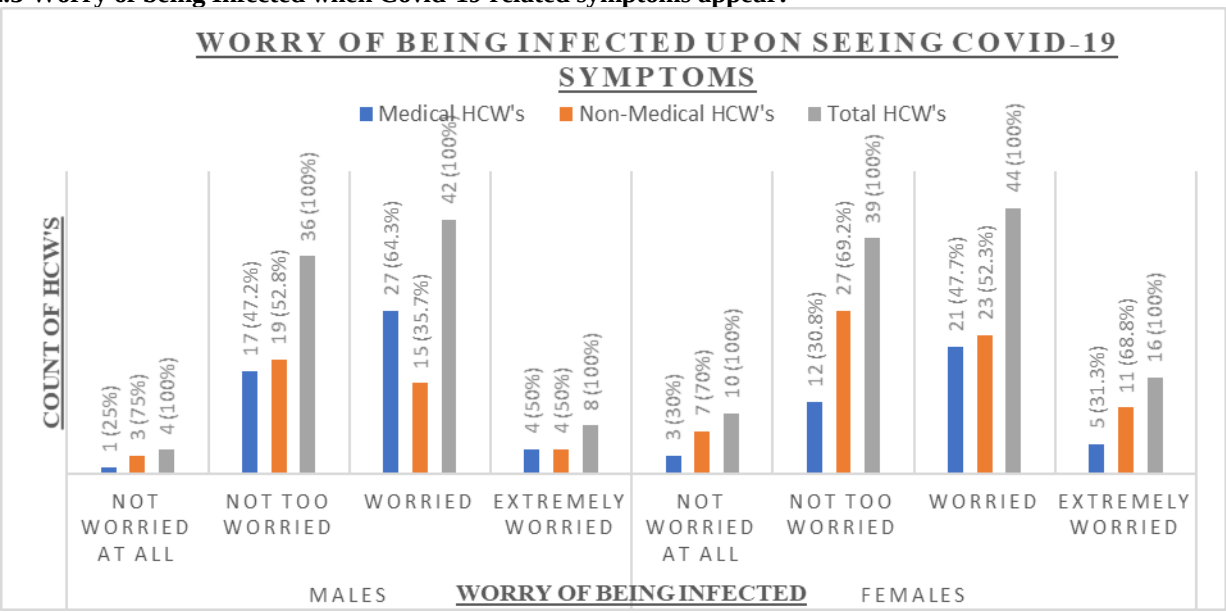

Figure 2.3: Worry of Medical and Non-Medical HCW's of being infected upon seeing Covid-19 symptoms

Figure 2.3 reveals that most male (64.3%) and female (47.7%) Medical health care workers reported they were "worried" of being infected if Covid-19 symptoms appeared.

Mean rank of Medical HCW's is 106.51 and non-medical HCW's is 94.63. The Chi-square value in males is 3.859[a] and in females is 3.220[b]. Statistically there is no linear association between the variables and the p values are not <0.05% advocating they are not significant and the variables are independent of each other.

2.4 Worry about lack of medical staff, inadequate protective equipment & medical resources:

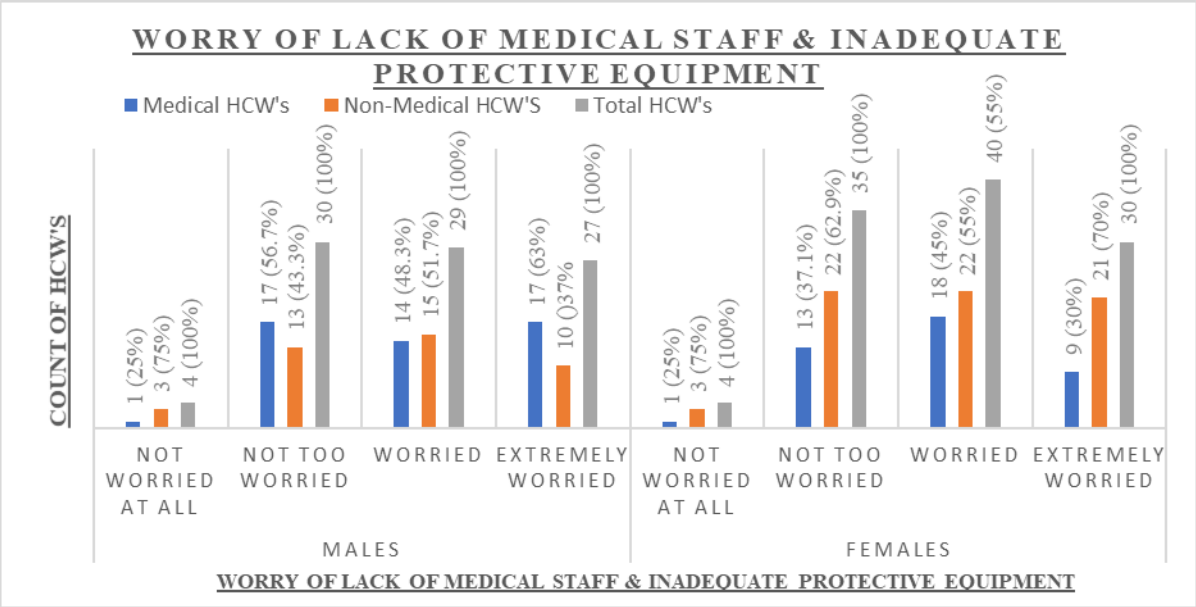

Figure 2.4: Worry of Medical and Non-Medical HCW's about lack of medical staff and inadequate protective equipment.

Figure 2.4 depicts that mostly Females were worried of lack of medical staff and inadequate protective equipment. Majority of Male Medical HCW's (63%) and fewer Male Non-medical HCW's (37%) reported they were "extremely worried" about lack of medical staff, inadequate protective equipment and medical resources. Female Medical (45%) and non-Medical (55%) HCW's reported they were "Worried".

Mean rank of Medical HCW's is 101.57 and non-medical HCW's is 98.71. Chi-square values in males is 2.693[a] and in females is 1.946[b]. Statistically there is no linear association between these variables and the p values are not <0.05% advocating they are not significant and the variables are independent of each other.

3. ANXIETY LEVELS OF HCW'S:

3.1 GAD-7 SCALE (Generalized Anxiety Disorder-7 Scale):

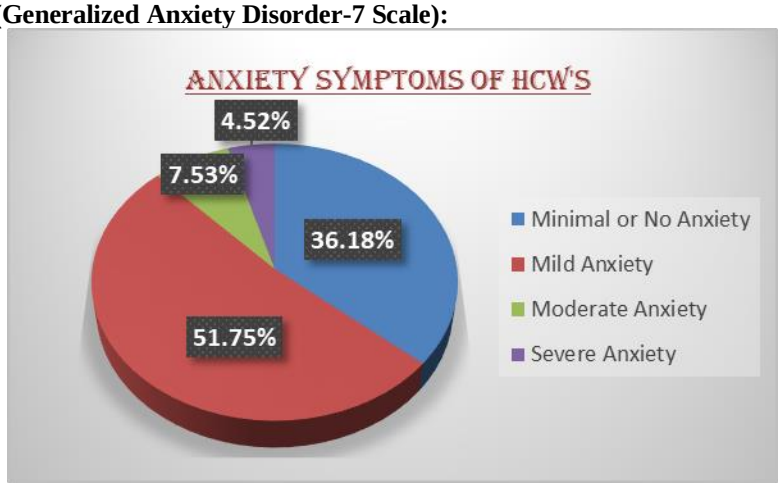

Figure 3.1: Anxiety symptoms of HCW's

Figure 3.1 reveals 51.75% (n=103) of total HCW's (n=199) reported to have symptoms of Mild Anxiety and 36.1% (n=72) reported Minimal or No Anxiety, 7.53% (n=15) and 4.52% (n=9) showed the symptoms of Moderate and Severe Anxiety respectively.

3.2 Comparison of Anxiety levels of Front-line HCW's with Second-line HCW's:

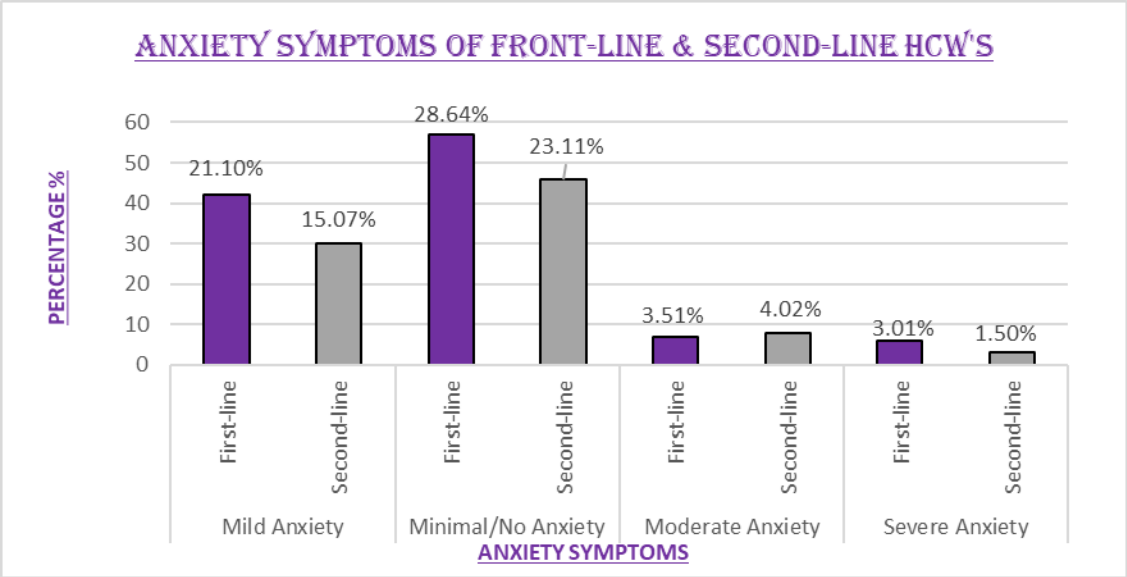

Figure 3.2 Comparison of Anxiety symptoms of Front-line and Second-line HCW's

Results on comparing Anxiety levels among Front-line HCW's and Second-line HCW's have shown Majority of Front-line [28.64%] and second-line [23.11%] HCW's had Minimal to No Anxiety symptoms. 21.10% of Front-line and 15.07% of second-line HCW's had Mild Anxiety symptoms. Fewer Front-line and second-line HCW's had Moderate Anxiety symptoms, and of Front-line and of second-line HCW's had Severe Anxiety symptoms. **(Figure 3.2)**

3.3 Comparison of Anxiety levels of Medical HCW's with Non-Medical HCW's:

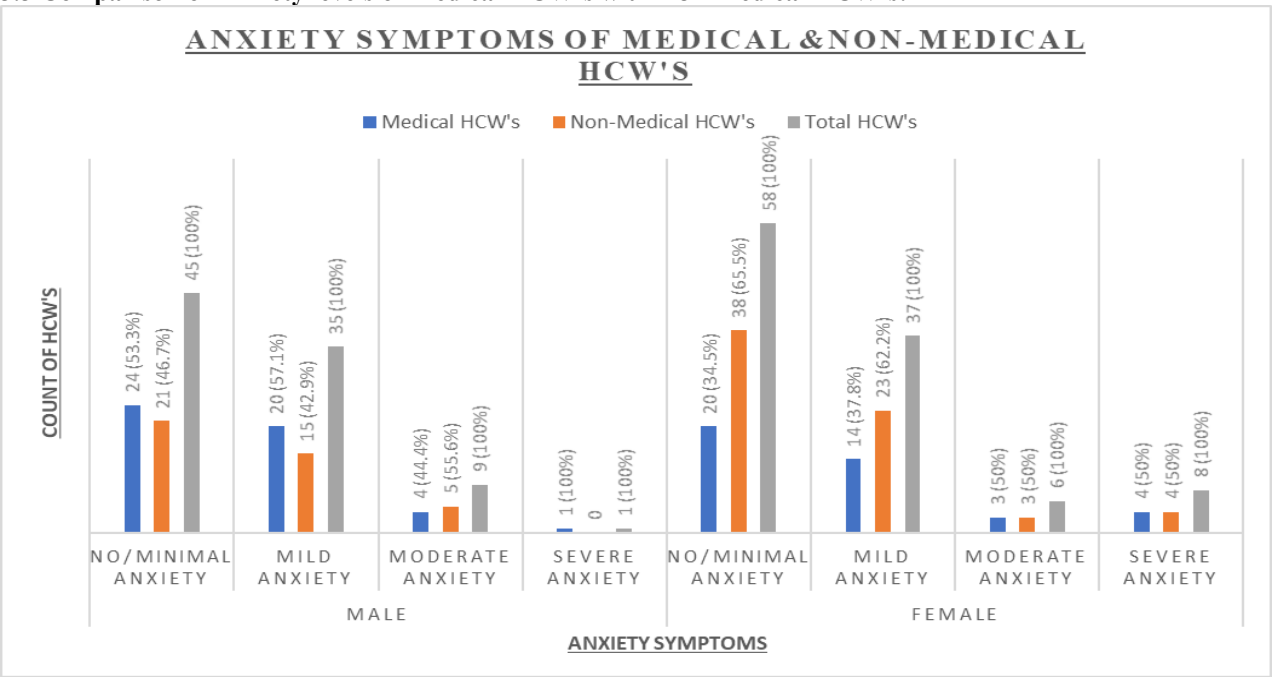

Figure 3.3 Comparison of Anxiety symptoms of Medical and Non-Medical HCW's

Figure 3.3 depicts that Severe Anxiety symptoms were seen in non-medical HCW's whereas majority of Female Non-Medical and Male Medical HCW's have reported minimal and mild Anxiety symptoms.

Table 3.3: Chi-Square Tests for Anxiety levels

Gender		Value	Df	Asymp. Sig. (2-sided)
Male	Pearson Chi-Square	1.325[a]	3	.723
	Likelihood Ratio	1.702	3	.636
	Linear-by-Linear Association	.023	1	.879
	N of Valid Cases	90		
Female	Pearson Chi-Square	1.158[b]	3	.763
	Likelihood Ratio	1.133	3	.769
	Linear-by-Linear Association	1.035	1	.309
	N of Valid Cases	109		

Mean rank of Medical HCW's is 99.16 and non-medical HCW's is 100.70. Table 3.3 displays Statistically there is No linear dependence among these variables. The p values are not <0.05% advocating they are not significant and the variables are independent of each other.

4. LIFESTYLE MODIFICATIONS AMONG HCW'S DURING COVID-19:

4.1 Smoking habits:

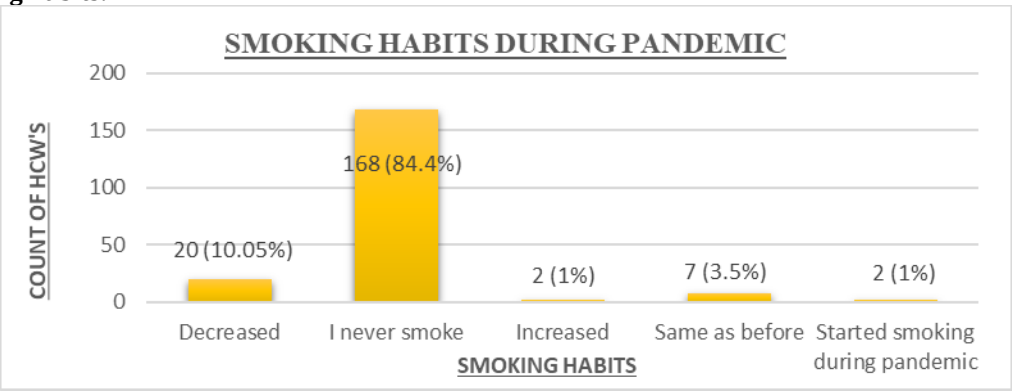

Figure 4.1 Smoking habits of HCW's during pandemic

Figure 4.1 conveys 10.05% reported that they decreased smoking during pandemic expressing a positive lifestyle change whereas exceptionally few respondants i.e., 1% reported they started smoking during pandemic expressing a negative lifestyle change.

4.2 Alcohol Intake:

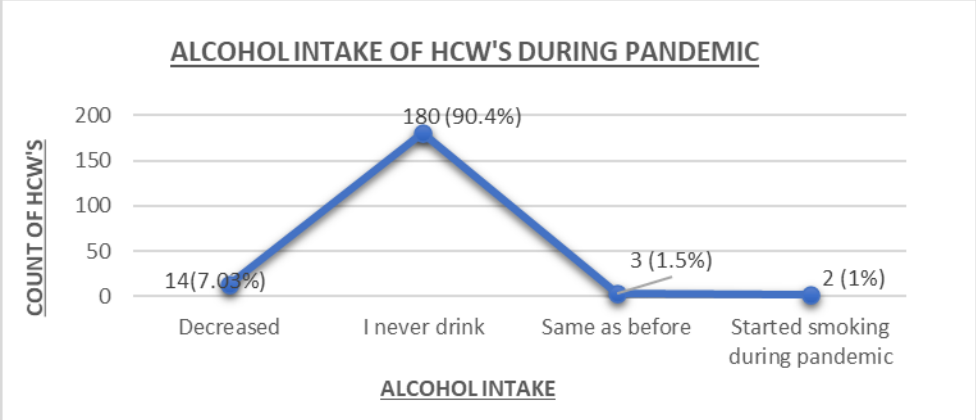

Figure 4.2 Drinking habits of HCW's

Figure 4.2 depicts that 7.03% reported they decreased consumption of alcohol expressing a positive lifestyle change whereas exceptionally few respondants i.e., 1% reported they started drinking during pandemic expressing a negative lifestyle change.

4.3 Sleep Quality and Time:

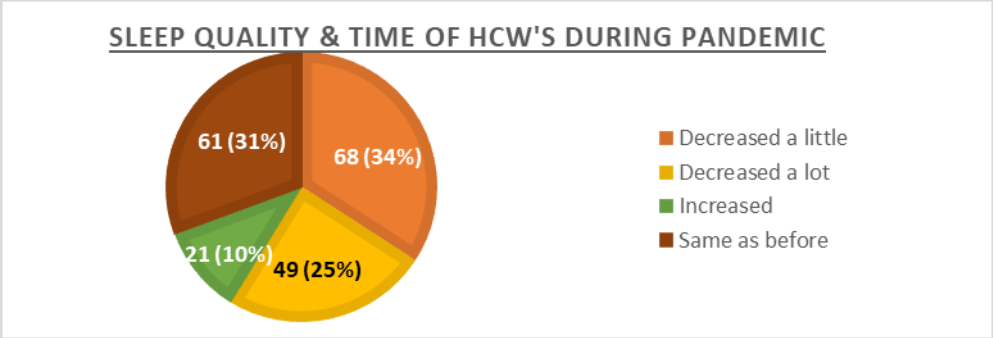

Figure 4.3 Sleeping habits of HCW's during pandemic

Figure 4.3 shows 31% of participants had no change in their sleep pattern. 59% reported their sleep quality and time decreased expressing a negative lifestyle change.

4.4 Time spent on Exercise:

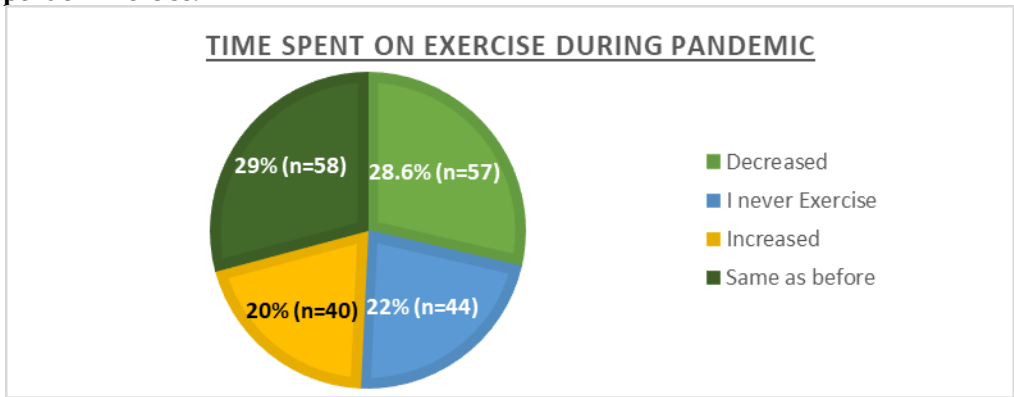

Figure 4.4 Time spent on Exercise by HCW's during pandemic

Figure 4.4 depicts 28.6% of total respondants reported that it decreased and 20% of them reported it increased during pandemic expressing a positive change.

4.5 Water intake:

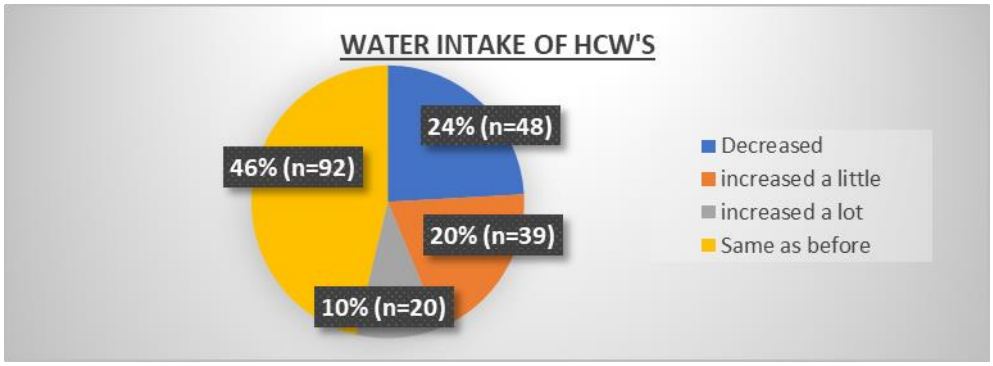

Figure 4.5 Water intake of HCW's during pandemic

Figure 4.5 represents 46% of total participants reported their water intake was same as before. 24% decreased water intake expressing negative lifestyle change.

4.6 Supplement Intake for boosting immunity:

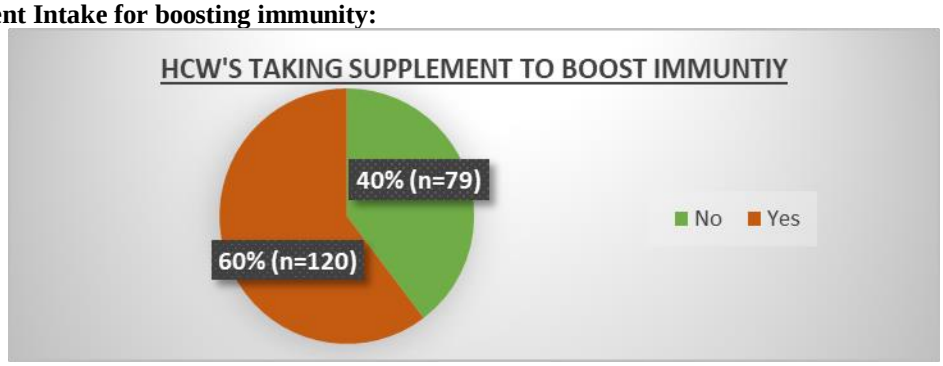

Figure 4.6 HCW's taking supplements to boost immunity during pandemic

Figure 4.6 shows 60% of HCW's reported they take supplements to boost immunity during pandemic and 40% reported they don't.

4.7 Foods for relieving Stress:

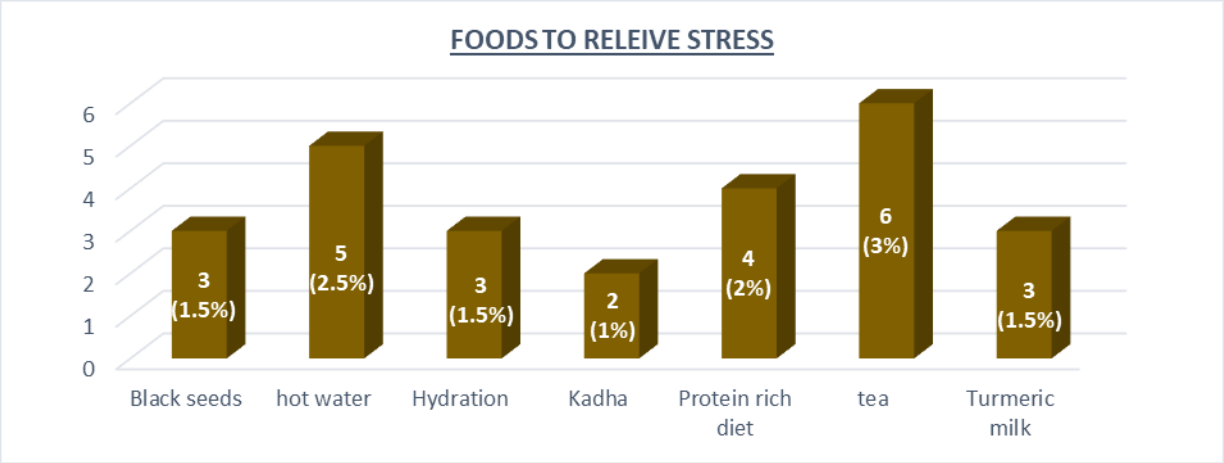

Figure 4.7 Stress relieving foods used by HCW's during pandemic

86.9% (178) reported they did not specifically use any food for relieving stress and figure 4.7 shows the remaining HCW's preferred Tea, hot water, protein rich diet, turmeric milk, and kadha for relieving stress.

4.8 Use of citrus fruits in diet:

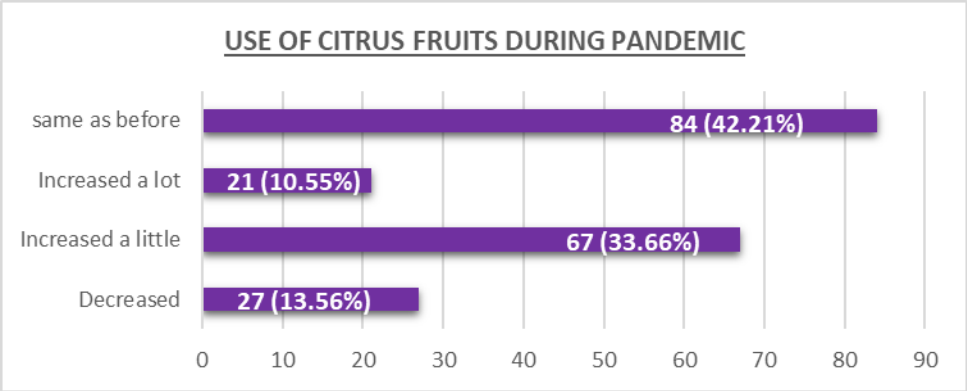

Figure 4.8 Use of Citrus fruits by HCW's during pandemic

Figure 4.8 displays 42.2% of participants reported the use of citrus fruits in their diet is same as before and 33.6% reported it increased.

4.9 Use of nuts, whole grains & healthy fats in diet:

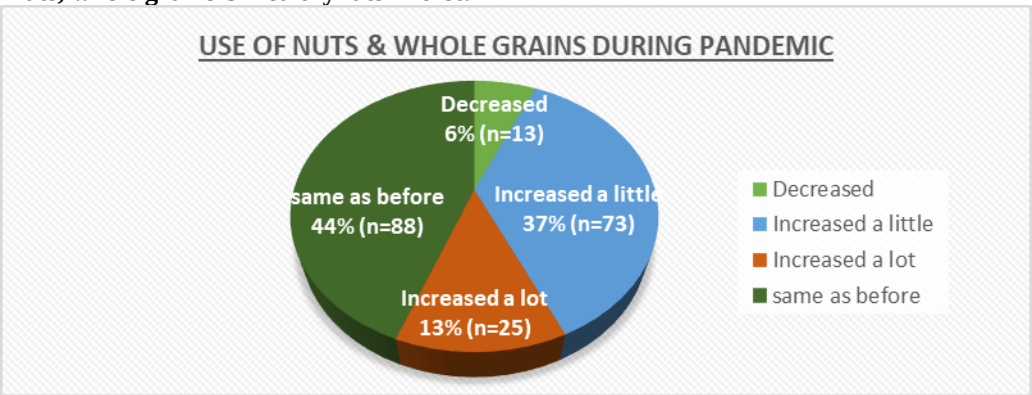

Figure 4.9 Use of nuts, whole grains and healthy fats by HCW's during pandemic

Figure 4.9 reveals majority of the respondants i.e., 44% reported use of nuts and healthy fats is same as before pandemic, 50% reported it increased portraying a positive lifestyle change.

4.10 Use of spices like garlic, ginger and turmeric in diet:

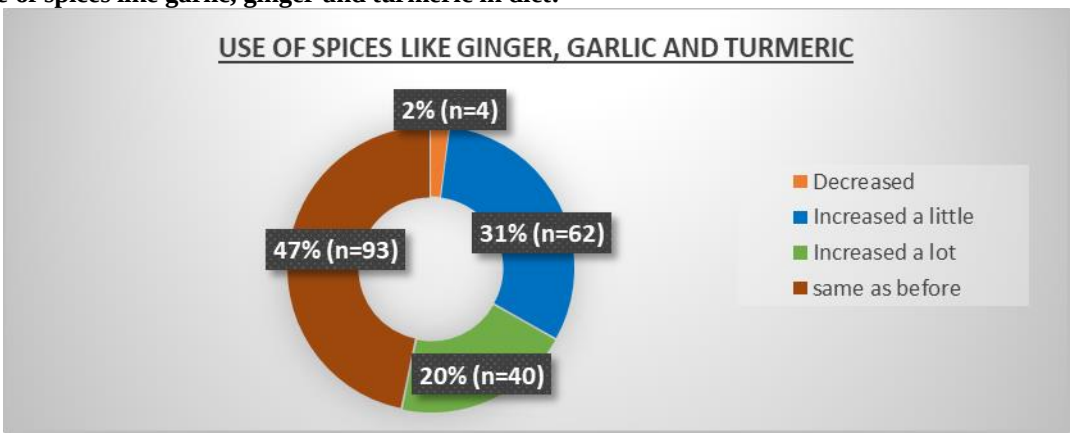

Figure 4.10 Use of spices like ginger, garlic &turmeric in diet during pandemic

Figure 4.10 reveals 47% of HCW's reported use of spices like ginger, garlic and turmeric was same as before. 51% reported it increased.

4.11 Use of tea like green tea, ginger tea or lemon tea in your diet:

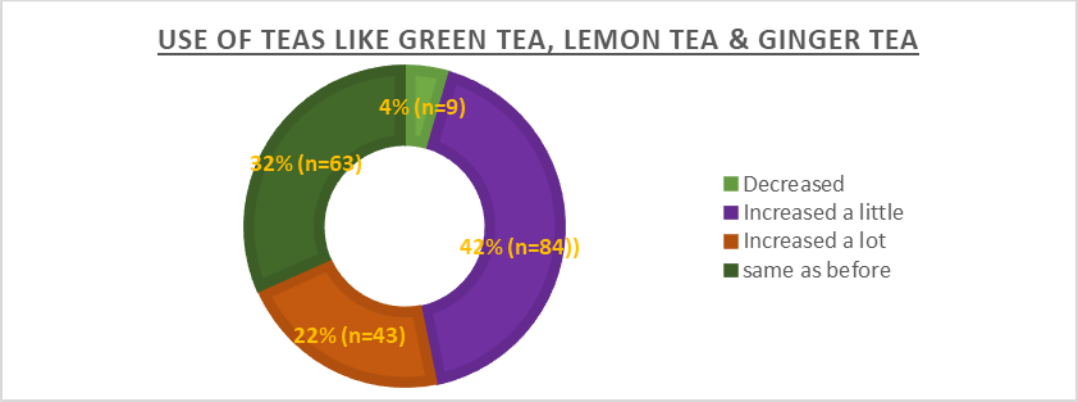

Figure 4.11 Use of tea like green tea, ginger tea or lemon tea by HCW's

Figure 4.11 depicts 64% respondants reported use of teas like Green tea, lemon tea, ginger tea increased lot expressing positive change in lifestyle. 32% reported it was same as before.

CONCLUSION:

Covid-19 has caused notable damage to the Mental Health of Healthcare Workers. Mild stressful impact was seen among different healthcare workers during the COVID-19 pandemic. Majority of HCW's i.e., a little more than half of them had mild symptoms of Anxiety followed by No/Minimal anxiety and only few HCW's have shown Severe anxiety symptoms. The risk perception of Covid-19 was higher in Medical HCW's and females when compared to non-medical HCW's and Men. The lifestyle changes apprehended in this study were equivalently positive, negative and unchanged. Evidence-based psychosocial interventions accompanying self-relaxation training, regular exercise and healthy lifestyle should be accentuated.

RECOMMENDATIONS:

- The participants in this study were limited in number thereby limiting the generalisability of the results, hence the findings of this study need to be further investigated in large population-based studies.
- The anxiety levels need be clinically diagnosed.
- Further studies can be done to study the Impact of the stress relieving foods taken by the HCW's on their mental health.

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