**Advances in Applied Psychology**
Vol. 4, No. 1, 2021, pp. 1-14
http://www.aiscience.org/journal/aap
ISSN: 2471-7169 (Print); ISSN: 2471-7193 (Online)

# Burnout Among Medical Students of Manipal University College Malaysia During COVID-19 Pandemic

**Thana Raj a/l Dhava*, Juycintha Presha Amuthan, Nisanthi a/p Poonimooty, Abid Ahmed Faleel, Rachneet Kaur a/p Gurdial Singh**

Faculty of Medicine, Manipal University College Malaysia, Manipal Academy of Higher Education (MAHE), Melaka, Malaysia

## Abstract

The ongoing pandemic, adversely has affected the social life, mental and physical health of a person which may eventually cause stress leading to burnout. In this case, medical education is one of the stressful fields and with this pandemic it could more likely engender burnout among medical students. This study was aimed to determine burnout among medical students of Manipal University College Malaysia (MUCM) during this Covid-19 pandemic and measure its association with sociodemographic characteristics, current living situation and involvement in extracurricular activities. A cross-sectional study was conducted among medical students of MUCM, Malaysia from March 2021 to April 2021. Data was collected by distributing an online questionnaire via google form link. Questionnaire comprises of two parts, part 1 being the demographic profile and part 2 consisting the burnout questions of Copenhagen Burnout Inventory. Statistical test such as unpaired T-test and ANOVA were used using Epi-Info software 7.4.2.0. Out of 162 students who had participated, 64.20% were clinical students and 35.80% were pre-clinical students. Our study discovered a total burnout score of 80.17, which shows majority of the students are likely to be having burnout. In which, personal burnout score turned out to be 20.99, colleagues related burnout had a mean score of 16.19, studies related burnout had a mean score of 25.02 and 17.96 for teachers related burnout. We have also found significant association between age, nationality, phase of studies, current living situation and teachers related burnouts. However, we did not come across any significant association between age, gender, ethnicity, nationality, phase of studies, family income, financial constraints, educational financial aid, current living situation, extracurricular activities such as exercise or yoga and studies related burnouts. In conclusion, significant number of medical students are suffering from burnouts, majority of them were those in clinical phase of studies. Therefore, necessary measures have to be taken in a way of preventing burnouts and avoiding unwanted consequences in the future.

## Keywords

Burnouts, Medical Student, Malaysia, COVID-19 Pandemic, Cross-sectional Study

Received: April 17, 2021 / Accepted: May 15, 2021 / Published online: May 31, 2021



## 1. Introduction

The notion of burnout was brought about by a study on harassment in the workplace and as such, the relevance of this notion to students and in terms of school context was accounted to be high. [1] A major cause of concern among

* Corresponding author
E-mail address: thanadhava@gmail.com (T. R. a/l Dhava)

students in medical schools of several countries is unavoidably their mental health: numerous demands and responsibilities are allocated to these students, along with overburdening of studies as the profession is not approving of mistakes in the health care of people, resulting in stress and anxiety in medical students. [2] Burnout syndrome comprises professional dubiety, depersonalization or professional skepticism and high levels of emotional draining, which is distinguished as an insufficient response to long-term emotional stress. [2-4] It also signifies specific work-related adverse effects closely related to decreased performance in medical professionals as well as personal satisfaction in their field. [3-5]

Globally, the overall prevalence of burnout among medical students during pre-COVID-19 was 18.1 percent and during COVID-19, it was 18.2 percent. [6] Every one in five medical students are found to have symptoms of burnout. [6] The United States had a 50 percent incidence of student burnout syndrome, whereas the United Kingdom had 27 percent. [7] Another study in Saudi Arabia shows the level of burnout syndrome among medical students is as high as about 67%. [8] In Malaysia, the burnout level ranges from 63.5% and 73.9% across all years and the highest burnout was found to be in the fourth year of medical school. [9] As little as one burnout symptom can lead to negative reactions in these students such as interference with the teaching and learning process apart from physical symptoms like exhaustion, drowsiness, eating disorders, unpredictable emotions and addiction to illicit drugs. [2, 10]

Education in medical school is said to be one of the most stressful throughout the world which makes its studying environment equally stressful. [11-13] This high level of stress may adversely affect physical and mental health of medical students. [14, 15] Stress may eventually progress to burnout and reduce medical students' efficacy in their work which reflect negatively on their academic performance. [16, 17] Previous studies show factors like parental expectations, studying in private universities with added pressure on more expensive tuition fees, loneliness and sleep deprivation are closely related to burnout syndrome. [18] Besides, burnout also has a close association with unhealthy eating habits, lack of physical activities, smoking and alcohol consumption. [19, 20] It has been noticed that the level of burnout is highest among students in clinical years regardless of this Covid-19 pandemic. [6] Moreover, burnout seems to affect final year students the most during this COVID-19 pandemic. [6]

Looking at the research done over the years, the main focus was generalized on professions leading to professional service being doctors, teachers and employees of other public service providers unwittingly disregarding the fact that burnout is not only occurring in them. [1] Students in school are also affected by burnout, most importantly medical students. [1] For that reason, it is crucial to explore burnout syndrome with regard to these distinct circumstances, directed at early detection to encourage precautionary interventions, as well as exacerbation, behavioural and symptomatological consequences in students due to burnout syndrome. [21] In Manipal University College Malaysia, a study on the prevalence of burnout was done in the year 2016 comparing medical students and non-medical students.[22] The results show a prevalence of 27.3% among medical students and 20.1% among non-medical students. However, there is limited information concerning burnout syndrome during this Covid-19 pandemic not only in our setting, but also in Malaysia.[22] Therefore, the aim of this study is to determine burnout among medical students of Manipal University College Malaysia (MUCM) during this Covid-19 pandemics and measure its association with sociodemographic characteristics, current living situation and involvement in extracurricular activities.

# 2. Methods

## 2.1. Study Design, Study Time, Study Setting, Study Population

A cross-sectional study was carried out from March 2021 to April 2021 in Manipal University College Malaysia (MUCM). MUCM has two campuses; one is in Muar, Johor, Malaysia and another in Bukit Baru, Malacca, Malaysia. Muar campus holds Bachelor of Medicine, Bachelor of Surgery (MBBS) students from semesters six and seven, whereas Malacca campus accommodates MBBS students from semester one, two, three, four, five, eight, nine and ten as well as Bachelor of Dental Surgery (BDS) and Foundation in Science (FIS) students. Our study population included both pre-clinical and clinical MBBS students of MUCM, with the numbers around 1300 students. Hence, the aim of this study was to determine burnout among medical students of MUCM during this Covid-19 pandemic.

## 2.2. Sample Size

Based on a previous study, the prevalence of burnout syndrome among medical students in Malaysia was 73.9%. [9] The population of MBBS students were taken as the sample size as shown below, which is 1300. By using the formula application software "Epi Info" version 7.2.4.0, the sample size (n) was calculated as below:

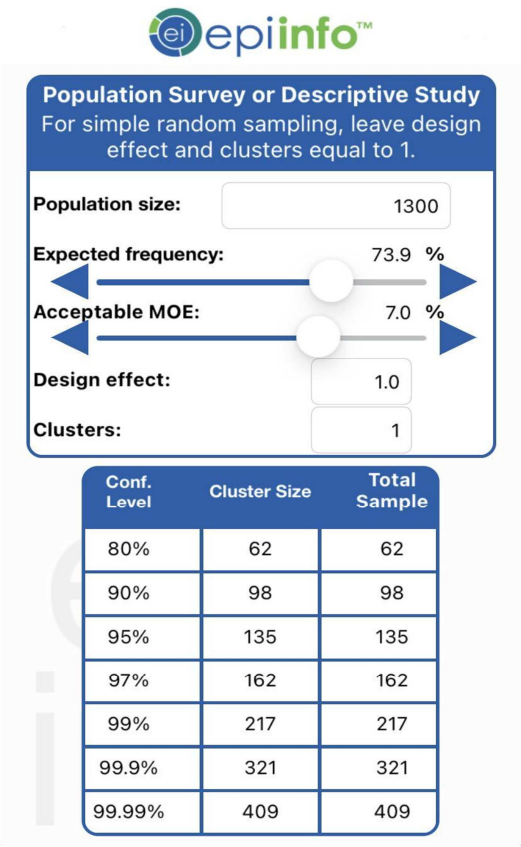


**Figure 1.** Sample size calculation using Epi Info.

By taking an acceptable margin of error of 7% and confidence level of 95%, the minimum sample size required was 135.

Allowing a non-response rate of 30%, the final sample size required was calculated as below;

$$\text{n (final)} = \frac{n\,(calculated)}{1-(non-response)} = \frac{135}{1-(0.3)} = 192.9$$

Therefore, the final sample size was 193.

## 2.3. Sampling

In this study, a non-probability purposive sampling method was used. The inclusion criteria included all the MBBS students of MUCM who willingly gave consent to participate in this study. This includes all the Malaysian students as well as the international students. Participation in this study was voluntary and participants were able to withdraw themselves from the study anytime during the study period. Exclusion criteria comprised of participants who have declined consent, given irrelevant answers in the survey and if multiple responses were given. The FIS and BDS students of MUCM have also been excluded in this study.

## 2.4. Data Collection

The data was collected by distributing questionnaires via a Google form link to all MBBS students of MUCM. The questionnaire consists of two parts, Part 1: Demographic Profile and Part 2: Burnout Syndrome.

The demographic profile consists of questions like age, gender, ethnicity, nationality, phase of studies, family income, financial constraints during this Covid 19 pandemic, educational financial aid, current living situation, involvement in physical activities, yoga and/or meditation during this pandemic. Whereas in part 2, burnout syndrome was assessed using Copenhagen Burnout Inventory for students (CBI-S) consisting of a total of 25 questions.[23] CBI-S has four components which are personal burnout, studies related burnout, colleagues related burnout and teachers related burnouts. Personal burnout consists of six questions, studies related burnout consist of seven questions, colleagues related burnouts consist of six questions and teachers related burnouts consist of six questions. Five points Likert scale was used, where students were made to choose from Never (1) to Always (5). Higher the score, greater the burnout.

## 2.5. Data Processing and Data Analysis

The collected data was processed in Microsoft Excel. These data was then compiled and analysed using "Epi Info" version 7.2.4.0. In this study, the qualitative data, being the gender, ethnicity, nationality, phase of study, family income, financial constraints, financial aid, living situation and involvement of physical activity was analysed using frequency and percentage. Whereas, the quantitative data, which consist of the age, prevalence and level of burnout was analysed using the mean, median, range, standard deviation and interquartile range.

The independent variables of this study comprise the age, gender, ethnicity, nationality, phase of study, family income, financial constraints, financial aid, living situation and the involvement of physical activity. In contrast, the dependent variable of this study is total burnout, personal burnout, studies-related burnout, colleagues-related burnout and teachers-related burnout. *P*-value of less than 0.05 was considered statistically significant.

**Table 1.** Demographic variables and statistical tests used in data analysis.

| Independent Variable | Dependent Variable | Hypothetical Tests |
|---|---|---|
| Age | | t-test |
| Gender | | t-test |
| Ethnicity | 1) Total Burnout | ANOVA |
| Nationality | 2) Personal Burnout | t-test |
| Phase of Studies | 3) Studies related Burnout | t-test |
| Family Income | | ANOVA |
| Financial Constraints | 4) Colleagues related Burnout | t-test |
| Educational Financial Aid | | ANOVA |
| Current Living Situation | 5) Teachers related Burnout | ANOVA |
| Exercise | | t-test |
| Yoga/Meditation | | t-test |

### 2.6. Ethical Consideration

Participation in this study was deemed completely voluntary. Besides, a written informed consent form with detailed explanation of the study was given to all the participants online. All the information obtained from the participants was kept anonymous and the confidentiality was maintained. Approval to conduct this research was obtained from the Research Ethics Committee, Faculty of Medicine, Manipal University College Malaysia.

## 3. Results

**Table 2.** Sociodemographic characteristics of medical students. (n=162).

| Demographic Variables | Frequency (%) |
|---|---|
| Age: | |
| >22 | 81(50.63) |
| ≤22 | 79(49.38) |
| Gender: | |
| Female | 118(72.84) |
| Male | 44(27.16) |
| Ethnicity: | |
| Chinese | 30(18.52) |
| Indian | 83(51.23) |
| Malay | 18(11.11) |
| Others | 31(19.14) |
| Nationality: | |
| Malaysian | 139(85.80) |
| Non-Malaysian | 23(14.20) |
| Phase of studies: | |
| Clinicals | 104(64.20) |
| Pre-clinicals | 58(35.80) |
| Family Income: | |
| <RM 4360 | 25(15.43) |
| >RM 9619 | 68(41.98) |
| RM 4360 - RM 9619 | 69(42.59) |
| Financial constraints: | |
| No | 88(54.32) |
| Yes | 74(45.68) |
| Educational Financial aid: | |
| Loan | 63(38.89) |
| Scholarship | 17(10.49) |
| Self Funded | 82(50.62) |
| Current Living Situation: | |
| Alone | 59(36.42) |
| With Family | 73(45.06) |
| With Friends | 30(18.52) |
| Extracurricular Activities: | |
| Exercise: | |
| No | 58(35.80) |
| Yes | 104(64.20) |
| Yoga/Meditation: | |
| No | 136(83.95) |
| Yes | 26(16.05) |

Table 2 shows frequency and percentage of different variables such as age, gender, ethnicity, nationality, phase of studies, family income, financial constraints, educational financial aid, current living situation and extracurricular activities like exercise and yoga or meditation. As for the age group, 50.63% of the participants were from the age group of >22 while 49.38% were from the age group of ≤22. As for the gender, 72.84% participants were female, while only 27.16% of participants were male. For ethnicity, 51.23% of participants are Indians, 18.52% were Chinese, 11.11% were Malay and 19.14% were others. For nationality, 85.80% of participants were Malaysian and 14.20% were non-Malaysian. For phase of studies, 64.20% participants were clinical students and 35.80% were pre-clinical students. For family income, 15.43% of participants were <RM 4360, 42.59% were in between RM 4360 - RM 9619 and 41.98% were >RM 9619. For financial constraints, 45.68% of participants were facing financial constraints while 54.32% were not facing financial constraints. For educational financial aid, 38.89% of participants were taking loans, 10.49% were having scholarships and the remaining 50.62% were all self-funded. For the current living situation, 36.42% of participants were staying alone, 45.06% were staying with family and 18.52% were staying with their friends. For the involvement in extracurricular activities, 64.20% of participants were doing exercise, while 35.80% were not doing exercise, and 16.05% of participants were doing yoga or meditation while 83.95% were not doing yoga or meditation.

**Table 3.** Burnouts among medical students.

| Variables | Mean (SD) | Min - Max |
|---|---|---|
| Total burnout (25-125) | 80.17 (18.29) | 34-125 |
| Personal burnout (6-30) | 20.99 (5.01) | 8-30 |
| Colleagues related burnout (6-30) | 16.19 (6.48) | 6-30 |
| Studies related burnout (7-35) | 25.02 (5.19) | 13-35 |
| Teachers related burnout (6-30) | 17.96 (6.51) | 6-30 |

Table 3 shows the mean, standard deviation as well as the minimum and maximum value of different variables inclusive of total burnout, personal burnout, colleagues related burnout, studies related burnout and teachers related burnout.

Total burnout has a mean of 80.17 (SD=18.29) with the lowest burnout value being 34 and highest, 125. Whereas, personal burnout has a mean of 20.99 (SD=5.01) with the lowest burnout value of 8 and highest, 30. Colleagues related burnout shows a mean value of 16.19 (SD=6.48) with the lowest burnout value of 6 and highest being 30. In studies related burnout, the mean value is 25.02 (SD=5.19), the lowest burnout value is 13 and highest is 35. Lastly, teachers related burnout shows a mean value of 17.96 (SD=6.51) with the lowest burnout value being 6 and highest, 30.

**Table 4.** Association between Demographic Variables and Total Burnout among medical students.

| Demographic variables | Total Burnouts | | | |
|---|---|---|---|---|
| | Mean(SD) | Mean Difference (95%CI) | T (df)/F (df1,df2) | P-value |
| Age | | | | |
| >22 | 77.21 (17.93) | -4.35 (-10.41,1.71) | -1.42 (160) | 0.158 |
| ≤22 | 81.56 (18.37) | | | |
| Gender | | | | |
| Female | 80.81 (17.91) | 2.73 (-3.66,9.11) | 0.84 (160) | 0.401 |
| Male | 78.18 (19.33) | | | |
| Ethnicity | | | | |
| Chinese | 78.27 (16.25) | | | |
| Indian | 80.17 (18.63) | - | 1.36 (3, 158) | 0.262 |
| Malay | 74.89 (15.73) | | | |
| Others | 85.06 (20.14) | | | |
| Nationality | | | | |
| Malaysian | 79.68 (17.47) | -3.45 (-11.59,4.68) | -0.84 (160) | 0.403 |
| Non-Malaysian | 83.13 (22.87) | | | |
| Phase of studies | | | | |
| Clinicals | 81.95 (18.60) | 4.99 (-0.90,10.87) | 1.67 (160) | 0.096 |
| Pre-clinicals | 76.97 (17.41) | | | |
| Family Income | | | | |
| <RM 4360 | 78.12 (17.11) | | | |
| >RM 9619 | 81.04 (20.87) | - | 0.23 (2, 159) | 0.792 |
| RM 4360 - RM 9619 | 80.04 (16.04) | | | |
| Financial constraints | | | | |
| No | 76.76 (17.76) | -7.45 (-13.05,-1.86) | -2.63 (160) | 0.009 |
| Yes | 84.22 (18.20) | | | |
| Educational Financial aid | | | | |
| Loan | 78.12 (17.11) | - | | |
| Scholarship | 75.65 (17.42) | | 0.66 (2, 159) | 0.517 |
| Self Funded | 81.24 (19.43) | | | |
| Current Living Situation | | | | |
| Alone | 85.32 (19.07) | | | |
| With Family | 76.38 (17.26) | - | 4.10 (2, 159) | 0.018 |
| With Friends | 79.23 (17.31) | | | |
| Extracurricular Activities | | | | |
| Exercise | | | | |
| No | 82.00 (17.93) | 2.86 (-3.07,8.78) | 0.95 (160) | 0.342 |
| Yes | 79.14 (18.49) | | | |
| Yoga/Meditation | | | | |
| No | 80.63 (18.13) | 2.86 (-4.89,10.60) | 0.73 (160) | 0.467 |
| Yes | 77.77 (19.29) | | | |

Table 4 shows the association between demographic variables (such as age, gender, ethnicity, nationality, phase of studies, family income, financial constraints, educational financial aid, current living situation and extracurricular activities like exercise and yoga or meditation) and burnout among medical students. Age >22 have a mean score of 77.21(SD=17.93) whereas age of ≤22 have a mean score of 81.56 (SD=18.37). The mean difference is -4.35 with 95% CI ranges from -10.41 to 1.71. The p-value is 0.158, thus statistically there is no significant association between age and burnout among medical students. Females have a mean score of 80.81 (SD=17.91), which is slightly higher than male with a mean score of 78.81 (SD=19.33). The mean difference is 2.73 with 95% CI ranges from -3.66 to 9.11. The p-value is 0.401, which means statistically there is no significant association between gender and burnout among medical students. Chinese have a mean score of 78.27 (SD=16.25), Indians have a means score of 80.17 (SD=18.63), Malays have a mean score of 74.89 (SD=15.73) and others have a mean score of 85.06 (SD=20.14). The p-value is 0.262, which means statistically there is no significant association between ethnicity and burnout among medical students. Malaysians have a mean score of 79.68 (SD=17.47) and non-Malaysians have mean scores of 83.13 (SD=22.87). The mean difference is -3.45 with 95% CI ranges from -11.59 to 4.68. The p-value is 0.403, which means there statistically there is no significant association between nationality and burnout among medical students. Clinical students have a mean score of 81.95 (SD=18.60) while pre-clinical students have a mean score of 76.97 (SD=17.41). The mean difference is 4.99 with 95% CI ranges from -0.90 to 10.87. The p-value is 0.096, thus there is no statistically significant association between phase of studies and burnout among medical students.

Participants with family income of <RM 4360 have a mean

score of 78.12 (SD=17.11), >RM9619 have a mean score of 81.04 (SD=20.87) and RM 4360 - RM 9619 have a mean score of 80.04 (SD=16.04). The p-value is 0.792 which means statistically there is no significant association between family income and burnout among medical students. Participants who were not facing financial constraints have a mean score of 76.76 (SD=17.76) and those who were facing financial constraints have a mean score of 84.22 (SD=18.20). The mean difference is -7.45 with 95% CI ranges from -13.05 to -1.86 The p-value is 0.009, which means statistically there is significant association between financial constraints and burnout among medical students. Under educational financial aid, participants on a loan have a mean score of 78.12 (SD=17.11), those on scholarship have a mean score of 75.65 (SD = 17.42) and those that are self funded have a mean score of 81.24 (SD = 19.43). The p-value is 0.517, which means statistically there is no significant association between education financial aid and burnouts among medical students. Participants who are living alone have a mean score of 85.32 (SD=19.07), living with family have a mean score of 76.38 (SD=17.26) and living with friends have a mean score of 79.23 (SD=17.31). The p-value is 0.018, which means there is significant association between current living situation and burnout among medical students. Participants who were not doing exercise have a mean score of 82.00 (SD=17.93) and those who were doing exercise have a mean score of 79.14 (SD=18.49). The mean difference is 2.86 with 95% CI ranges from -3.07 to 8.78. The p-value is 0.342, which means there statistically there is no significant association between exercise and burnout among medical students. Participants who were not doing yoga or meditation have a mean score of 80.63 (SD=18.13) and those who were doing yoga or meditation have a mean score of 77.77 (SD=19.29). The mean difference is 2.86 with 95% CI ranges from -4.89 to 10.60. The p-value is 0.467, which means statistically there is no significant association between yoga or meditation and burnout among medical students.

**Table 5.** Association between Demographic Variables and Personal Burnout among medical students.

| Demographic variables | Personal Burnout | | | |
|---|---|---|---|---|
| | Mean(SD) | Mean Difference (95%CI) | T (df)/F (df1,df2) | P-value |
| Age | | | | |
| >22 | 20.94 (5.25) | 0.05 (-1.51,1.61) | 0.07 (158) | 0.947 |
| ≤22 | 20.89 (4.72) | | | |
| Gender | | | | |
| Female | 21.49 (4.93) | 1.83 (0.10,3.56) | 2.09 (160) | 0.038 |
| Male | 19.66 (5.04) | | | |
| Ethnicity | | | | |
| Chinese | 19.33 (4.68) | | | |
| Indian | 21.65 (4.92) | - | 2.88 (3,158) | 0.038 |
| Malay | 19.11 (4.84) | | | |
| Others | 21.94 (5.23) | | | |
| Nationality | | | | |
| Malaysian | 20.78 (4.88) | -1.53 (-3.75,0.70) | -1.36 (160) | 0.177 |
| Non-Malaysian | 22.30 (5.68) | | | |
| Phase of studies | | | | |
| Clinicals | 21.06 (5.33) | 0.18 (-1.45,1.81) | 0.22 (160) | 0.829 |
| Pre-clinicals | 20.88 (4.43) | | | |
| Family Income | | | | |
| <RM 4360 | 21.40 (4.90) | | | |
| >RM 9619 | 20.97 (5.39) | - | 0.10 (2,159) | 0.902 |
| RM 4360 - RM 9619 | 20.87 (4.72) | | | |
| Financial constraints | | | | |
| No | 19.85 (5.25) | -2.50 (-4.02,-0.98) | -3.25 (160) | <0.001 |
| Yes | 22.35 (4.37) | | | |
| Educational Financial aid | | | | |
| Loan | 21.40 (4.56) | | | |
| Scholarship | 18.71 (5.35) | - | 2.05 (2,159) | 0.133 |
| Self Funded | 21.16 (5.21) | | | |
| Current Living Situation | | | | |
| Alone | 21.93 (5.73) | | | |
| With Family | 20.80 (4.46) | - | 2.23 (2,159) | 0.111 |
| With Friends | 19.63 (4.54) | | | |
| Extracurricular Activities | | | | |
| Exercise | | | | |
| No | 21.91 (4.73) | 1.43 (-0.18,3.04) | 1.76 (160) | 0.081 |
| Yes | 20.48 (5.11) | | | |
| Yoga/Meditation | | | | |
| No | 21.10 (4.99) | 0.68 (-1.44,2.80) | 0.63 (160) | 0.528 |
| Yes | 20.42 (5.19) | | | |

Table 5 shows the association between demographic variables, inclusive of age, gender, ethnicity, nationality, phase of studies, family income, financial constraints, educational financial aid, current living situation and extracurricular activities like exercise and yoga or meditation with personal burnout among medical students. Participants of age >22 have a mean score of 20.94 (SD=5.25) whereas, participants of age ≤22 have a mean score of 20.89 (SD=4.72). The mean difference is 0.05 with 95% CI range from -1.51 to 1.61. The p-value is 0.947, thus statistically there is no significant association between age and personal burnout among medical students. Female participants have a mean score of 21.49 (SD=4.93), which is slightly higher than males with a mean score of 19.66 (SD=5.04). The mean difference is 1.83 with 95% CI range from 0.10 to 3.56. The p-value is 0.038, which means statistically there is significant association between gender and personal burnout among medical students. Chinese participants have a mean score of 19.33 (SD=4.68), Indians instead have a means score of 21.65 (SD=4.92), Malays have a mean score of 19.11 (SD=4.84) and others have a mean score of 21.94 (SD=5.23). The p-value is 0.038, which means statistically there is significant association between ethnicity and personal burnout among medical students. Malaysians have a mean score of 20.78 (SD=4.88) and non-Malaysians have mean scores of 22.30 (SD=5.68). The mean difference is -1.53 with 95% CI range from -3.75 to 0.70. The p-value is 0.177, which means statistically there is no significant association between nationality and personal burnout among medical students. Clinical students have a mean score of 21.06 (SD=5.33) while pre-clinical students have a mean score of 20.88 (SD=4.43). The mean difference is 0.18 with 95% CI range from -1.45 to 1.81. The p-value is 0.829, thus there is no statistically significant association between phase of studies and personal burnout among medical students.

**Table 6.** Association between Demographic Variables and Studies related Burnout among medical students.

| Demographic variables | Studies related Burnout | | | |
|---|---|---|---|---|
| | Mean(SD) | Mean Difference (95%CI) | T (df)/F (df1,df2) | P-value |
| Age | | | | |
| >22 | 25.04(5.39) | 0.25(-1.35, 1.85) | 0.31(158) | 0.757 |
| ≤22 | 24.78(4.86) | | | |
| Gender | | | | |
| Female | 25.49(4.86) | 1.72(-0.08, 3.51) | 1.89 (160) | 0.061 |
| Male | 23.77(5.85) | | | |
| Ethnicity | | | | |
| Chinese | 24.00(5.88) | | | |
| Indian | 25.25(5.12) | - | 0.54(3, 158) | 0.656 |
| Malay | 25.83(4.72) | | | |
| Others | 25.52(5.05) | | | |
| Nationality | | | | |
| Malaysian | 25.06(4.96) | 0.28(-2.03,2.60) | 0.24(160) | 0.810 |
| Non-Malaysian | 24.78(6.56) | | | |
| Phase of studies | | | | |
| Clinicals | 24.99(5.35) | -0.10(-1.78, 1.59) | -0.11(160) | 0.912 |
| Pre-clinicals | 25.09(4.94) | | | |
| Family Income | | | | |
| <RM 4360 | 25.68(4.76) | | | |
| >RM 9619 | 25.53(5.90) | - | 1.22(2, 159) | 0.299 |
| RM 4360 - RM 9619 | 24.29(4.53) | | | |
| Financial constraints | | | | |
| No | 24.63(5.20) | -0.88(-2.49, 0.74) | -1.07(160) | 0.287 |
| Yes | 25.50(5.17) | | | |
| Educational Financial aid | | | | |
| Loan | 25.38(4.72) | | | |
| Scholarship | 23.59(4.99) | - | 0.80(2, 159) | 0.452 |
| Self Funded | 25.04(5.57) | | | |
| Current Living Situation | | | | |
| Alone | 25.80(5.53) | | | |
| With Family | 24.52(4.81) | - | 1.05(2, 159) | 0.354 |
| With Friends | 24.73(5.39) | | | |
| Extracurricular Activities | | | | |
| Exercise | | | | |
| No | 25.40(5.02) | 0.58(-1.10, 2.26) | 0.68(160) | 0.498 |
| Yes | 24.82(5.30) | | | |
| Yoga/Meditation | | | | |
| No | 25.17(5.14) | 0.90(-1.30, 3.10) | 0.81(160) | 0.410 |
| Yes | 24.27(5.46) | | | |

Participants with family income of <RM 4360 have a mean score of 21.40 (SD=4.90), >RM9619 have a mean score of 20.97 (SD=5.39) and RM 4360 - RM 9619 have a mean score of 20.87 (SD=4.72). The p-value is 0.902 which means statistically there is no significant association between family income and personal burnout among medical students. Participants who were not facing financial constraints have a mean score of 19.85 (SD=5.25) and those who were facing financial constraints have a mean score of 22.35 (SD=4.37). The p-value is <0.001, which means statistically there is significant association between financial constraints and personal burnout among medical students. Under educational financial aid, participants on a loan have a mean score of 21.40 (SD=4.56), those on scholarship have a mean score of 18.71 (SD = 5.35) and those that are self-funded have a mean score of 21.16 (SD = 5.21). The p-value is 0.133, which means statistically there is no significant association between education financial aid and personal burnout among medical students. Participants who are living alone have a mean score of 21.93 (SD=5.73), living with family have a mean score of 20.80 (SD=4.46) and living with friends have a mean score of 19.63 (SD=4.54). The p-value is 0.111, which means there is no significant association between current living situation and personal burnout among medical students. Participants who were not exercising have a mean score of 21.91 (SD=4.73) and those who were exercising have a mean score of 20.48 (SD=5.11). The mean difference is 1.43 with 95% CI range from -0.18 to 3.04. The p-value is 0.081, which means statistically there is no significant association between exercise and personal burnout among medical students. Participants who were not engaging themselves in yoga or meditation have a mean score of 21.10 (SD=4.99) and those who were engaging themselves in yoga or meditation have a mean score of 20.42 (SD=5.19). The mean difference is 0.68 with 95% CI range from -1.44 to 2.80. The p-value is 0.528, which means statistically there is no significant association between yoga or meditation and personal burnout among medical students.

Table 6 shows the association between demographic variables (such as age, gender, ethnicity, nationality, phase of studies, family income, financial constraints, educational financial aid, current living situation and extracurricular activities like exercise and yoga or meditation) and studies related burnout among medical students. Age >22 have a mean score of 25.04 (SD=5.39) whereas age of ≤22 have a mean score of 24.78 (SD=4.86). The mean difference is 0.25 with 95% CI ranges from -1.35 to 1.85. The p-value is 0.757, thus statistically there is no significant association between age and studies related burnout among medical students. Females have a mean score of 25.49 (SD=4.86), which is slightly higher than male with a mean score of 23.77 (SD=5.85). The mean difference is 1.72 with 95% CI ranges from -0.08 to 3.51. The p-value is 0.061, which means statistically there is no significant association between gender and studies related burnout among medical students. Chinese have a mean score of 24.00 (SD=5.88), Indians have a means score of 25.25 (SD=5.12), Malays have a mean score of 25.83 (SD=4.72) and others have a mean score of 25.52 (SD=5.05). The p-value is 0.656, which means statistically there is no significant association between ethnicity and studies related burnout among medical students. Malaysians have a mean score of 25.06 (SD=4.96) and non-Malaysians have mean scores of 24.78 (SD=6.56). The mean difference is 0.28 with 95% CI ranges from -2.03 to 2.60. The p-value is 0.810, which means there statistically there is no significant association between nationality and studies related burnout among medical students. Clinical students have a mean score of 24.99 (SD=5.35) while pre-clinical students have a mean score of 25.09 (SD=4.94). The mean difference is -0.10 with 95% CI ranges from -1.78 to 1.59. The p-value is 0.912, thus there is no statistically significant association between phase of studies and studies related burnout among medical students. Participants with family income of <RM 4360 have a mean score of 25.68 (SD=4.76), >RM9619 have a mean score of 25.53 (SD=5.90) and RM 4360 - RM 9619 have a mean score of 24.29 (SD=4.53). The p-value is 0.299 which means statistically there is no significant association between family income and studies related burnout among medical students.

Participants who were not facing financial constraints have a mean score of 24.63 (SD=5.20) and those who were facing financial constraints have a mean score of 25.04 (SD=5.57). The p-value is 0.287, which means statistically there is no significant association between financial constraints and studies related burnout among medical students. Under educational financial aid, participants on a loan have a mean score of 25.38 (SD=4.72), those on scholarship have a mean score of 23.59 (SD = 4.99) and those that are self funded have a mean score of 15.99 (SD = 6.39). The p-value is 0.452, which means statistically there is no significant association between education financial aid and studies related burnouts among medical students. Participants who are living alone have a mean score of 25.80 (SD=5.53), living with family have a mean score of 24.52 (SD=4.81) and living with friends have a mean score of 24.73 (SD=5.39). The p-value is 0.354, which means there is no significant association between current living situation and studies related burnout among medical students. Participants who were not doing exercise have a mean score of 25.40 (SD=5.02) and those who were doing exercise have a mean score of 24.82 (SD=5.30). The mean difference is 0.58 with 95% CI ranges from -1.10 to 2.26. The p-value is 0.498,

which means there statistically there is no significant association between exercise and studies related burnout among medical students. Participants who were not doing yoga or meditation have a mean score of 25.17 (SD=5.14) and those who were doing yoga or meditation have a mean score of 24.27 (SD=5.46). The mean difference is 0.90 with 95% CI ranges from -1.30 to 3.10. The p-value is 0.410, which means statistically there is no significant association between yoga or meditation and studies related burnout among medical students.

**Table 7.** Association between Demographic Variables and Colleagues related Burnout among medical students.

| Demographic variables | Colleagues related Burnout | | | |
|---|---|---|---|---|
| | Mean(SD) | Mean Difference (95%CI) | T (df)/F (df1,df2) | P-value |
| Age | | | | |
| >22 | 15.75(6.38) | -0.72 (-2.73, 1.29) | -0.70 (158) | 0.483 |
| ≤22 | 16.47(6.49) | | | |
| Gender | | | | |
| Female | 16.03(6.67) | -0.58 (-2.84, 1.69) | -0.51 (160) | 0.614 |
| Male | 16.61(5.99) | | | |
| Ethnicity | | | | |
| Chinese | 17.37(5.50) | | | |
| Indian | 15.70(6.44) | - | 1.24 (3, 158) | 0.305 |
| Malay | 14.50(5.08) | | | |
| Others | 17.35(7.92) | | | |
| Nationality | | | | |
| Malaysian | 16.32(6.21) | 0.88 (-2.00, 3.77) | 0.60 (160) | 0.547 |
| Non-Malaysian | 15.43(8.02) | | | |
| Phase of studies | | | | |
| Clinicals | 16.21(6.31) | 0.06 (-2.05, 2.16) | 0.05 (160) | 0.958 |
| Pre-clinicals | 16.16(6.83) | | | |
| Family Income | | | | |
| <RM 4360 | 14.04(6.79) | - | 1.72 (2, 159) | 0.182 |
| >RM 9619 | 16.37(6.78) | | | |
| RM 4360 - RM 9619 | 16.80(5.97) | | | |
| Financial constraints | | | | |
| No | 15.05(5.55) | -2.51 (-4.49, -0.52) | -2.49 (160) | 0.014 |
| Yes | 17.55(7.24) | | | |
| Educational Financial aid | | | | |
| Loan | 16.63(7.08) | | | |
| Scholarship | 15.53(4.43) | - | 0.27 (2, 159) | 0.760 |
| Self Funded | 15.99(6.39) | | | |
| Current Living Situation | | | | |
| Alone | 17.49(7.00) | | | |
| With Family | 15.42(6.42) | - | 1.89 (2, 159) | 0.154 |
| With Friends | 15.50(5.24) | | | |
| Extracurricular Activities | | | | |
| Exercise | | | | |
| No | 16.62(6.89) | 0.67 (-1.43, 2.77) | 0.63 (160) | 0.530 |
| Yes | 15.95(6.26) | | | |
| Yoga/Meditation | | | | |
| No | 16.30(6.36) | 0.69 (-2.06, 3.43) | 0.49 (160) | 0.622 |
| Yes | 15.62(7.17) | | | |

Table 7 shows the association between demographic variables (such as age, gender, ethnicity, nationality, phase of study, family incomes, financial constraint, educational financial aid, current living situation and extracurricular activities like exercise and yoga or meditation) and colleagues related burnout among medical students. In the age category, students above 22 years have a mean score of 15.75 (SD=6.38), while students of 22 years and below have a mean score of 16.47 (SD=6.49). The mean difference between these two age categories is -0.72 with 95% CI ranging from -2.73 to 1.29. The p-value was calculated as 0.483, which can be interpreted statistically that there is no significant association between age and colleagues related burnout among medical students. Under the gender category, females have a mean score of 16.03 (SD=6.67) however the males have a higher mean score of 16.61 (SD=5.99). The mean difference between the females and males is -0.58 with 95% CI ranging from -2.84 to 1.69. The p-value was calculated as 0.614, which can be interpreted statistically that there is no significant association between gender and colleagues related burnouts among medical students. In ethnicity, Chinese have a mean score of 17.37 (SD=5.50) while Indians have a means score of 15.70 (SD=6.44). Malays have a mean score of 14.50 (SD=5.08) and others have a mean score of 17.35 (SD=7.92). The p-value was calculated as 0.305, which can be interpreted statistically that

there is no significant association between ethnicity and colleagues related burnouts among medical students. Under nationality, Malaysians have a mean score of 16.32 (SD=6.21) while non-Malaysians have mean scores of 15.43 (SD=8.02). The mean difference between Malaysians and non-Malaysians is 0.88 with 95% CI ranging from -2.00 to 3.77. The p-value was calculated as 0.547, which can be interpreted statistically that there is no significant association between nationality and colleagues related burnouts among medical students. Students in the clinical phase have a mean score of 16.21 (SD=6.31) while pre-clinical students have a mean score of 16.16 (SD=6.83). The mean difference between these two phases is 0.06 with 95% CI ranging from -2.05 to 2.16. The p-value was calculated as 0.958, which can be interpreted statistically that there is no significant association between phase of studies and colleagues related burnouts among medical students.

**Table 8.** Association between Demographic Variables and Teachers related Burnout among medical students.

| Demographic variables | Teachers related Burnout | | | |
|---|---|---|---|---|
| | Mean(SD) | Mean Difference (95%CI) | T (df)/F (df1,df2) | P-value |
| Age | | | | |
| >22 | 18.88(6.36) | 2.08(0.08, 4.08) | 2.05(158) | 0.042 |
| ≤22 | 16.80(6.45) | | | |
| Gender | | | | |
| Female | 17.89(6.55) | -0.25(-2.53, 2.03) | -0.21(160) | 0.831 |
| Male | 18.14(6.49) | | | |
| Ethnicity | | | | |
| Chinese | 17.57(6.43) | | | |
| Indian | 17.57(6.64) | - | 1.77(3, 158) | 0.153 |
| Malay | 16.44(6.22) | | | |
| Others | 20.26(6.16) | | | |
| Nationality | | | | |
| Malaysian | 17.52 (6.40) | -3.09 (-5.95,-0.23) | -2.13 (160) | 0.035 |
| Non-Malaysian | 20.61 (6.40) | | | |
| Phase of studies | | | | |
| Clinicals | 19.69 (6.37) | 4.85 (2.87,6.82) | 4.85 (160) | 0.001 |
| Pre-clinicals | 14.84 (5.58) | | | |
| Family Income | | | | |
| <RM 4360 | 17.00 (6.43) | | | |
| >RM 9619 | 18.18 (6.88) | - | 0.32 (2, 159) | 0.727 |
| RM 4360 - RM 9619 | 18.09 (6.23) | | | |
| Financial constraints | | | | |
| No | 17.24 (6.64) | -1.57 (-3.59 to 0.45) | -1.54 (160) | 0.126 |
| Yes | 18.81 (6.30) | | | |
| Educational Financial aid | | | | |
| Loan | 16.57 (5.95) | | | |
| Scholarship | 17.82 (7.63) | - | 2.63 (2, 159) | 0.075 |
| Self Funded | 19.05 (6.55) | | | |
| Current Living Situation | | | | |
| Alone | 20.10 (6.27) | | | |
| With Family | 15.64 (6.02) | - | 9.39 (2, 159) | <0.001 |
| With Friends | 19.37 (6.48) | | | |
| Extracurricular Activities Exercise | | | | |
| No | 18.07 (6.64) | 0.17 (-1.94,2.29) | 0.16 (160) | 0.871 |
| Yes | 17.89 (6.47) | | | |
| Yoga/Meditation | | | | |
| No | 18.05 (6.58) | 0.59 (-2.17,3.35) | 0.42 (160) | 0.674 |
| Yes | 17.46 (6.27) | | | |

Participants with family income of <RM 4360 have a mean score of 14.04 (SD = 6.79), >RM9619 have a mean score of 16.37 (SD=6.78) and RM 4360 - RM 9619 have a mean score of 16.80 (SD=5.97). The p-value was calculated as 0.182 which can be interpreted statistically that there is no significant association between family income and colleagues related burnout among medical students. Participants without facing financial constraints during the Covid-19 have a mean score of 15.05 (SD=5.55) and those facing financial constraints have a mean score of 17.55 (SD=7.24). The mean difference between both is -2.51 with 95% CI ranging from -4.49 to -0.52. The p-value was calculated as 0.014, which can be interpreted statistically that there is significant association between financial constraints and colleagues related burnout among medical students. Under educational financial aid, participants on a loan have a mean score of 16.63 (SD=7.08), those on scholarship have a mean score of 15.53 (SD=4.43) and those that are self funded have a mean score of 15.99 (SD=6.39). The p-value was calculated as 0.760, which can be interpreted statistically that there is no significant association between educational financial

aid and colleagues related burnout among medical students. Under current living situation participants who are living alone have a mean score of 17.49 (SD=7.00), those living with family have a mean score of 15.42 (SD=6.42) and those living with friends have a mean score of 15.50 (SD=5.24). The p-value was calculated as 0.154, which can be interpreted statistically that there is no significant association between current living situation and colleagues related burnout among medical students. In extracurricular activities, participants who were not doing exercise have a mean score of 16.62 (SD=6.89) and those who were doing exercise have a mean score of 15.95 (SD=6.26). The mean difference is 0.67 with 95% CI ranging from -1.43 to 2.77. The p-value was calculated as 0.530, which can be interpreted statistically that there is no significant association between exercise and colleagues related burnout among medical students. Whereas participants who were not doing yoga or meditation have a mean score of 16.30 (SD=6.36) and those who were doing yoga or meditation have a mean score of 15.62 (SD=7.17). The mean difference is 0.69 with 95% CI ranging from -2.06 to 3.43. The p-value was calculated as 0.622, which can be interpreted statistically that there is no significant association between yoga or meditation and colleagues related burnout among medical students.

Table 8 exhibits the association between demographic or recreational variables (such as age, gender, ethnicity, nationality, phase of study, family income, financial constraint, educational financial aid, current living situation and extracurricular activities like exercise, yoga or meditation) and teachers related burnout among medical students. In the age criterion, students above 22 years have a mean score of 18.88 (SD = 6.36), while students aged 22 years and below have a mean score of 16.08 (SD = 6.45). The mean difference between these two age categories is 2.08 with a 95% CI ranging from 0.08 to 4.08. The p-value turned out to be 0.042. Statistically, there is no significant association between age and teachers related burnout among medical students. Under gender, females have a mean score of 17.89 (SD = 6.55) whereas males score a slightly higher mean of 18.14 (SD = 16.49). The mean difference between the females and males is -0.25 with 95% CI ranging from -2.53 to 2.03. The p-value was calculated as 0.831. So statistically, there is no significant association between gender and teachers related burnouts among medical students. For ethnicity as a criterion, Chinese have a mean score of 17.57 (SD = 6.43) while Indians have a means score of 17.57 (SD = 6.64). Malays have a mean score of 16.44 (SD = 6.22) and others have a mean score of 20.26 (SD = 6.16). The p-value was calculated as 0.153, which can be interpreted statistically that there is no significant association between ethnicity and teachers related burnouts among medical students. With regard to nationality, Malaysians have a mean score of 17.52 (SD = 6.40) while non-Malaysians have mean scores of 20.61 (SD = 6.40). The mean difference between Malaysians and non-Malaysians is -3.09 with 95% CI ranging from -5.95 to -0.23. The p-value turned out to be 0.035, so statistically, there is a significant association between nationality and teachers related burnout among medical students. Students in their clinical phase have a mean score of 19.69 (SD = 6.37) while pre-clinical students have a mean score of 14.84 (SD = 5.58). The mean difference between the two phases is 4.85 with a 95% CI ranging from 2.87 to 6.82. The p-value came out to be 0.001, which means there definitely is a significant association between phase of studies and teachers related burnout among medical students.

Students with a family income of <RM 4360 have a mean score of 17.00 (SD = 6.43); >RM9619 have a mean score of 18.18 (SD = 6.88) and RM 4360 - RM 9619 have a mean score of 18.09 (SD = 6.23). The p-value was 0.727 thus, there is no significant association between family income and teachers related burnout among medical students. Students who didn't face financial constraints during the Covid-19 pandemic have a mean score of 17.24 (SD = 6.64) and those facing financial constraints have a mean score of 18.81 (SD = 6.30). The mean difference between both is -1.57 with 95% CI ranging from -3.59 to 0.45. The p-value was calculated as 0.126, which can be inferred that there is no significant association between financial constraints and teachers related burnout among medical students. Students on a loan have a mean score of 16.57 (SD = 5.95); those who are on a scholarship have a mean score of 17.82 (SD = 7.63) and those who are self-funded have a mean score of 19.05 (SD = 6.55). The p-value calculated was 0.075, hence, there is no significant association between educational financial aid and teachers related burnout among medical students. Students who are living alone have a mean score of 20.10 (SD = 6.27); students living with family have a mean score of 15.64 (SD = 6.02) and those living with friends have a mean score of 19.37 (SD = 6.48). The p-value was calculated as 0.001. This shows a significant association between current living situations and teachers related burnout among medical students. Students who do not exercise have a mean score of 18.07 (SD = 6.64) and those who were have a mean score of 17.89 (SD = 6.47). The mean difference is 0.17 with 95% CI with a range of -0.94 to 2.29. The p-value was 0.871, which shows that there is no significant association between exercise and teachers related burnout among medical students. Lastly, students who did not yoga or meditate have a mean score of 18.05 (SD = 6.58) and those who were have a mean score of 17.46 (SD = 6.27). The mean difference is 0.59 with 95% CI ranging from -2.17 to 3.35. The calculated p-value was 0.674, which again shows no significant association between yoga or meditation and teachers related

burnout among medical students.

## 4. Discussion

We conducted a cross sectional study aiming to determine burnout among medical students of Manipal University College Malaysia (MUCM). We also aimed to determine the association of burnout with sociodemographic characteristics, current living situation and involvement in extracurricular activities.

In our study, we discovered a total burnout score of 80.17, which shows majority of the students are likely to be having burnout. Whereas the personal burnout score turned out to be 20.99. Colleagues related burnout has a mean score of 16.19. On the contrary, a research done among medical students at University Sains Malaysia showed a higher personal burnout score compared to colleagues related burnout. [9] Additionally, a score of 25.02 was obtained for studies related burnout and 17.96 for teachers related burnout in our study. In comparison to another cross-sectional study on burnout conducted in Malaysia, the studies related burnout was the highest followed by personal burnout, colleagues related burnout and teachers related burnout. [22]

We found that there were significant association between financial constraint, current living situation and burnout among medical students. The students who had financial constraint had significantly higher burnout score than those who did not have. Furthermore, we found that the students who were staying alone currently had higher burnout score than those living with friends or family. However, there were no significant association between age, gender, ethnicity, nationality, phase of studies, family income, educational financial aid, extracurricular activities such as exercise or yoga and burnout. However, a cross sectional study carried out in Lebanon shows that students who are living alone have lesser burnout compared to those who are living with parents. [13] There's another cross-sectional study carried out in Egypt, showing students who are away from family have higher burnout compare to those living with family. [14]

There were also significant association between gender, ethnicity, financial constraint and personal burnout among students. Female medical students had significantly higher personal burnout scores than male students. Whereas students from other ethnicity had the highest personal burnout score compared to Chinese, Indians, and Malays. Those who had financial constraints had slightly higher personal burnout score than those who didn't. However, there were no significant association between age, nationality, phase of studies, family income, educational financial aid, current living situation, extracurricular activities such as exercise or yoga and personal burnouts.

A cross-sectional study which was conducted by Arifa A. Asghar in Karachi, Pakistan, shows that gender did not share a significant association with burnouts. [18] However another study in Pakistan showed a contradictory result whereby females have a lower level of burnout. [8] Moreover, a research from Malaysia reported that higher percentage of female medical students tend to have burnout than male students. [9] A survey in Saudi Arabia among medical students also noted significant correlation between gender and burnout where relatively female medical students had higher emotional exhaustion and depersonalization compared to male medical students. [10]

A study was conducted in Malaysia by Ri Wei Andrew Chin**,** showing non-Malay medical students to have higher burnout than Malay medical students. [9] However, another study among medical students in Malaysia showed there were no significant association between ethnicity and burnouts. [22] Another study in Monash University Malaysia showed that more than half of the participants had burnout in which majority of them were Chinese. [24]

We did not find any significant association between age, gender, ethnicity, nationality, phase of studies, family income, financial constraints, educational financial aid, current living situation, extracurricular activities such as exercise or yoga and studies related burnouts. However, we found out that, a cross sectional study carried out in Lebanon showed that, students who were not involved in any physical activities had higher burnout compared to those who involved in physical activities. [13] Similarly there was another previous study conducted in Saudi Arabia, also showed that students who were not engaging with extracurricular activities show higher burnout compare to those who engaged with extracurricular activities. [8]

On the contrary, we found a significant association between current financial constraints and colleagues related burnouts. Where, students who had financial constraints were having higher burnout than those who did not face any financial constraints. Otherwise, there were no significant association between age, gender, ethnicity, nationality, phase of studies, family income, financial constraints, current living situation, extracurricular activities such as exercise or yoga and colleagues related burnouts. A research done in Ethiopia, also learned that those who do not have enough income are found to have higher rate of burnout. [11]

Moreover, there were significant association between age, nationality, phase of studies, current living situation and teachers related burnouts. Students who were more than 22 years old had significantly higher teachers related burnout score than those who are below the age of 22 years. Non-Malaysians had a higher teachers related burnout score than Malaysians. At the

same time, clinical students had significantly higher teachers related burnout score than the preclinical students. Besides, those who are living alone had the highest teachers related burnout scores than those who were living with family and friends. However, there were no significant association between gender, ethnicity, family income, financial constraints, educational financial aid, extracurricular activities such as exercise or yoga and teachers related burnouts. Besides a cross-sectional study was conducted in Saudi Arabia among medical students by Sami A. Almalki, showed that students who were 24 years old and more had higher burnouts than students who were 20-23 years old. [8] According to a research conducted by Tan Wing among medical students in Malaysia, there was no significant difference in burnouts between respondents aged ≤ 22 and ≥ 23. [22]

A survey which was conducted among medical students in Malaysia, showed that burnout was highest in Year 4 medical students because as the fourth year is a period of transition from pre-clinical years to clinical years and therefore it requires them to adapt quickly in a new learning environment but this can cause unwanted stress.[9] However another study by Youssef Altannir, found that the burnout decreased as the students advanced from pre-clinical to clinical years. [10] Where medical students; during the preclinical and clinical periods are expected to be more responsible to ward patients and expose to an extensive volume of knowledge and practice. [10]

Based on a research done by previous students from the same college in Malaysia, it was also found that families with low income have higher rate of burnout. [22] Another study done in Saudi was found to have similar results in which students who find their family income unsatisfactory tend to have higher burnout rate. [14] In our study it shows that students who are self-funded have higher burnout compare to those who are on a scholarships and also loan. A cross sectional study carried out previously, showed that students who are not on loan have higher burnout compare to those who are on loan. [22]

Our study showed that there were significant association between nationality and teachers related burnouts where non-Malaysians had higher burnout score compared to Malaysians. This may be because of the uncertainty of their return to campus, where their studies are solely via online mode. Hence, this could be a factor leading to teachers related burnout being more likely among foreign medical students compared to local students.

Unfortunately, our study has had certain limitations as well. Our study was a cross-sectional study which only allowed us to collect information from participants at one point in time. Therefore, we were unable to observe the progression of burnouts and the risk factor among participants which may change over time. Our study was conducted in a short duration of four weeks. Besides, our study was only done in one private medical school hence the findings cannot be generalized to other settings. Our study also showed the participation from preclinical students (35.8%) was comparatively lesser than clinical students (64.2%). These lower response rates could be due to exam period or online classes at home. However students in the clinical phase are on campus and have been going to the hospital yet they are able to give responses. This may be due to the pre-clinical phase students not knowing much about burnout thus leading to disinterest in answering a questionnaire regarding it.

In the study population, the mean total burnout is in the high range with studies-burnout being the highest among the four components questioned. To understand the relation of burnout especially studies-burnout among the medical students, an interview part of the survey could be done to understand the students more deeply and find out how exactly it is affecting them. The condition should be detected earlier among medical students to prevent full burnout by the time they graduate and go into working life. Measures such as identifying the stressor, having extra-curricular activities and positive thinking enforcement could be done to decrease the chances of producing burnout doctors in the nearest future. Moreover, reassessment of goals and good support system could relieve students from burning themselves out thus leading to more determined students than the feeling of quitting medical college.

## 5. Conclusion

In conclusion, based on the study we have conducted, it was observed that a significant number of medical students are suffering from burnout, majority being those in the clinical phase of their studies. There was also a significant association observed between financial constraints and total burnout. Adding to that, foreign students were found to have higher teachers related burnout compared to Malaysian students. Hence, we should work hand in hand to reduce burnout among medical students and prioritize early detection of burnout syndrome. Raising awareness on the knowledge of burnout syndrome is also crucial, especially for those affected to come forward and seek for help thus, building up their confidence to face the future.

## Acknowledgements

We would like to express our heartfelt appreciation to the Dean of Faculty of Medicine, MUCM, Professor Adinegara Lutfi Abas. We would also like to express our gratitude to our lecturers, Professor Dr Htoo Htoo Kyaw Soe, Associate

Professor Dr Sujata Khobragade and Assistant Professor Dr Mila Nu Nu Htay from the Department of Community Medicine, MUCM for providing their guidance throughout this study. We would also like to thank the Research Ethics Committee, Faculty of Medicine, Manipal University College Malaysia. Most importantly, we would like to thank all those who volunteered and participated in this study.

## References

[1] Jelas ZM, Azman N. Validity and Reliability of Burnout Scale for Malaysian Students. Journal of Applied Sciences. 2015 Apr; 15 (4): 661-7.

[2] Boni RA, Paiva CE, De Oliveira MA, Lucchetti G, Fregnani JH, Paiva BS. Burnout among medical students during the first years of undergraduate school: Prevalence and associated factors. PloS one. 2018 Mar 7; 13 (3): e0191746.

[3] Al-Alawi M, Al-Sinawi H, Al-Qubtan A, Al-Lawati J, Al-Habsi A, Al-Shuraiqi M, Al-Adawi S, Panchatcharam SM. Prevalence and determinants of burnout syndrome and depression among medical students at Sultan Qaboos University: a cross-sectional analytical study from Oman. Archives of environmental & occupational health. 2019 May 4; 74 (3): 130-9.

[4] Kim E, Mallett R, Hrabok M, Yang YA, Moreau C, Nwachukwu I, Kravtsenyuk M, Abba-Aji A, Li D, Agyapong VI. Reducing Burnout and Promoting Health and Wellness Among Medical Students, Residents, and Physicians in Alberta: Protocol for a Cross-Sectional Questionnaire Study. JMIR research protocols. 2020; 9 (4): e16285.

[5] Backović DV, Ilić Živojinović J, Maksimović J, Maksimović M. Gender differences in academic stress and burnout among medical students in final years of education. Psychiatria Danubina. 2012 Jun 24; 24 (2.): 175-81.

[6] Zis P, Artemiadis A, Bargiotas P, Nteveros A, Hadjigeorgiou GM. Medical Studies during the COVID-19 Pandemic: The Impact of Digital Learning on Medical Students' Burnout and Mental Health. International Journal of Environmental Research and Public Health. 2021 Jan; 18 (1): 349.

[7] Asencio-López L, Almaraz-Celis GD, Carrillo Maciel V, Huerta Valenzuela P, Silva Goytia L, Muñoz Torres M, Monroy Caballero F, Regalado Tapia J, Dipp Martin K, López Miranda D, Medina Lavenant C. Burnout syndrome in first to sixth-year medical students at a private university in the north of Mexico: descriptive cross-sectional study. Medwave. 2016 Apr 25; 16 (03).

[8] Almalki SA, Almojali AI, Alothman AS, Masuadi EM, Alaqeel MK. Burnout and its association with extracurricular activities among medical students in Saudi Arabia. International journal of medical education. 2017; 8: 144.

[9] Chin RW, Chua YY, Chu MN, Mahadi NF, Yusoff MS, Wong MS, Lee YY. Prevalence of Burnout among Universiti Sains Malaysia Medical Students. Education in Medicine Journal. 2016 Jul 1; 8 (3).

[10] Altannir Y, Alnajjar W, Ahmad SO, Altannir M, Yousuf F, Obeidat A, Al-Tannir M. Assessment of burnout in medical undergraduate students in Riyadh, Saudi Arabia. BMC medical education. 2019 Dec; 19 (1): 1-8.

[11] Haile YG, Senkute AL, Alemu BT, Bedane DM, Kebede KB. Prevalence and associated factors of burnout among Debre Berhan University medical students: a cross-sectional study. BMC medical education. 2019 Dec; 19 (1): 1-1.

[12] Wassif GO, Gamal-Eldin DA, Boulos DN. Stress and Burnout among Medical Students. Journal of High Institute of Public Health. 2019 Dec 1; 49 (3): 190-8.

[13] Fares J, Saadeddin Z, Al Tabosh H, Aridi H, El Mouhayyar C, Koleilat MK, Chaaya M, El Asmar K. Extracurricular activities associated with stress and burnout in preclinical medical students. Journal of epidemiology and global health. 2016 Sep 1; 6 (3): 177-85.

[14] El-Masry R, Ghreiz SM, Helal RM, Audeh AM, Shams T. Perceived stress and burnout among medical students during the clinical period of their education. Ibnosina J Med Biomed Sci. 2013 Jul 1; 5 (4): 179-87.

[15] Barbosa ML, Ferreira BL, Vargas TN, da Silva GM, Nardi AE, Machado S, Caixeta L. Burnout prevalence and associated factors among Brazilian medical students. Clinical practice and epidemiology in mental health: CP & EMH. 2018; 14: 188.

[16] Willcock SM, Daly MG, Tennant CC, Allard BJ. Burnout and psychiatric morbidity in new medical graduates. Medical Journal of Australia. 2004 Oct; 181 (7): 357-60.

[17] Lau SC, Chow HJ, Wong SC, Lim CS. An empirical study of the influence of individual-related factors on undergraduates' academic burnout: Malaysian context. Journal of Applied Research in Higher Education. 2020 Oct 23.

[18] Asghar AA, Faiq A, Shafique S, Siddiqui F, Asghar N, Malik S, Kamal SD, Hanif A, Qasmani MF, Ali SU, Munim S. Prevalence and predictors of the burnout syndrome in medical students of Karachi, Pakistan. Cureus. 2019 Jun; 11 (6).

[19] Győrffy Z, Birkás E, Sándor I. Career motivation and burnout among medical students in Hungary-could altruism be a protection factor?. BMC Medical Education. 2016 Dec; 16 (1): 1-8.

[20] Cecil J, McHale C, Hart J, Laidlaw A. Behaviour and burnout in medical students. Medical education online. 2014 Jan 1; 19 (1): 25209.

[21] Moura GdQ, Magalhaes TAd, Brito MRSF, Messias RB, Brito AB, Pinho, Ld, et al. PREVALENCE OF BURNOUT SYNDROME IN UNIVERSITIES AND THEIR ASSOCIATED FACTORS. International Journal of Development Research (IJDR) December 2020; 10 (12): 42787-42793.

[22] Wing T, Pey YC, Subramaniam V, Ab Raof NA, Ting OW, Ahmad MH. Prevalence of Burnout in Medical and Non-medical Undergraduate Malaysian Students in Various International Universities-A Cross-Sectional Study. Journal of Advances in Medicine and Medical Research. 2018 Mar 29:1-3.

[23] Campos JA, Carlotto MS, Marôco J. Copenhagen Burnout Inventory-student version: adaptation and transcultural validation for Portugal and Brazil. Psicologia: Reflexão e Crítica. 2013; 26 (1): 87-97.

[24] Kristanto T, Chen WS, Thoo YY. Academic burnout and eating disorder among students in Monash University Malaysia. Eating behaviors. 2016 Aug 1; 22: 96-100.