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Sonika Khanal
University of Nebraska Medical Center

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Heartache Beyond the Physical: Unraveling the Nexus Between Myocardial Infarction History and Depressive Disorders in US Adults

Prepared By:

Sonika Khanal
MPH (Epidemiology)

Capstone Committee Members:

Dr. Kendra Ratnapradipa (Assistant Professor) **[Committee Chair]**
Dr. Ariane Rung (Associate Professor and Vice Chair)
Anthony Blake (Director of Professional Programs)
Dr. Ishrat Kamal-Ahmed (Instructor)

Abstract:

Objective: To estimate the prevalence of depressive disorders among US adults and explore the association between a history of Myocardial Infarction (MI) and depressive disorders, considering potential risk factors and demographic variables.

Methods: A cross-sectional study was conducted from 2022 Behavioral Risk Factor Surveillance System data, including 390,429 US adults. Logistic regression was used to estimate the association between the history of MI and depressive disorders, adjusting for age, gender, race, smoking status, health insurance, education level, and BMI. Effect modification by age was assessed.

Results: The prevalence of depressive disorders was 21.19%, with 4.46% reporting a history of MI. A significant positive association was found between MI history and depressive disorders (POR 1.45, 95% CI 1.36-1.55). All the covariates were significantly associated with depressive disorders. Stratified analysis by age revealed varying effects across different age groups.

Conclusion: Demonstration of significant association between a history of MI and depressive disorders among US adults suggesting the importance of mental health screening and targeted interventions among MI patients to improve overall health outcomes and quality of life.

Keywords: Myocardial infarction, Depressive disorders, Depression, BRFSS, Association, Prevalence

Background

Myocardial infarction (MI), commonly known as heart attack, is a severe coronary condition marked by abrupt cardiac demise, posing a significant threat to life. Among several other heart diseases, MI has resulted in more than a million deaths in the United States.[1] Every year in the US, 805,000 people have an MI.[2] In 2018, approximately 658,555 hospitalizations resulting from MI incidents were documented.[3] The economic burden as of 2016 was found to be approximately $84.9 billion.[4] Around 13-19% of patients with MI usually develop depressive disorder.

Depressive disorders are prevalent mental health conditions affecting individuals of every age and geographic location.[5,6] Depression, characterized by profound feelings of sadness and despair persisting for extended periods, can lead individuals to believe that life has lost its meaning. [6] Those experiencing depression often lose enthusiasm for previously enjoyable activities and may also encounter physical symptoms such as disrupted sleep patterns.[5] It can be associated with various complications which severely affect the quality of life.[6]

Depression occurring after MI, whether as an initial episode or a recurrent condition, is a significant concern. Most of the time, depressive disorder goes unrecognized due to a lack of diagnosis or poor diagnosis.[6] It is frequently overlooked, with only 10% of MI patients experiencing depression being formally diagnosed.[7] This adversely impacts both cardiac prognosis and overall quality of life. It is crucial to evaluate depression while a person is still in the hospital and at each follow-up visit since it is most prevalent

during hospitalization and within the initial six months following a myocardial infarction.[7,12]

Research on the prevalence of depressive disorders among individuals who have undergone myocardial infarction has been limited.[7] Demographic variables such as age gender, education, and other variables such as tobacco use, access to health care, and stressful life events may contribute to the prevalence of depressive disorders influencing the mechanisms through which depression impacts individuals.[8,9] It is important to identify patients with MI at high risk for depression, so these patients may be targeted for depression screening and treatment.[10] Beyond mortality, depression is linked to extended hospitalization and serves as a predictor for unfavorable symptomatic, psychological, and social outcomes.[10] Limited research suggests that depression among patients hospitalized for MI may persist for several months, highlighting the importance of identifying and addressing depression in this population.[11]

It is important to understand whether a history of MI is associated with an increased likelihood of having a history of depressive disorder. The objectives of this study are to estimate the prevalence of depressive disorders among the adult U.S. population and explore the potential risk factors and demographic variables that can influence the association between the history of MI and depressive disorders. The primary hypothesis of this study is that a history of MI is associated with an increased likelihood of having a history of depressive disorder among US adults.

Methods

Study Design

In this study, a cross-sectional design was used to investigate the association between a history of MI and the likelihood of having a history of depressive disorder among adults in the United States. The data was sourced from the 2022 Behavioral Risk Factor Surveillance System (BRFSS) survey, with a final sample size of 390,429. BRFSS survey is a national survey that collects information on various health-related behaviors, chronic health conditions, and the use of preventive services among US adults. The survey utilizes a complex sampling design to ensure data representativeness. The survey used a disproportionate stratified sample (DSS) design for landline samples in 51 projects, while Guam, Puerto Rico, and the US Virgin Islands used a simple random sample design. States sample disproportionately from sub-state regions to record diverse responses that require statistical analyses to adjust for the survey design to get valid estimates and inferences about the target population. The responses received in the BRFSS survey were self-reported as they were telephone surveys.

Study Population

A sample of adults aged 18 years and older residing in all 50 states, the District of Columbia, Guam, Puerto Rico, and the US Virgin Islands were included. Inclusion criteria included individuals residing in all 50 states as well as the District of Columbia, Guam, Puerto Rico, and the US Virgin Islands, adults aged 18 years and older, individuals who participated in the 2022 BRFSS survey, and those who answered the questions related to the history of depressive disorders and Myocardial Infarction. On

the other hand, individuals under the age of 18 years, incomplete responses (Don't know / Not sure / Refused), and missing (<10%) were excluded from the study. The variables were recoded to make the data, analysis, and interpretations more manageable and meaningful.

Outcome

The history of depressive disorder is the outcome variable. The initial variable 'ADDEPEV3', originally capturing responses regarding ever being diagnosed with a depressive disorder, was recoded into the simplified binary variable 'DEPEV_N', comprising "Yes" and "No" responses. The missing data for this variable was <10%.

Exposure

The history of MI is the main exposure. The initial variable 'CVDINFR4', originally indicating whether individuals were ever diagnosed with MI, was recoded into the simplified binary variable 'CVD_N', consisting of "Yes" and "No" responses [Reference: No]. The missing data for this variable was <10%.

Measures

Other covariates are age, gender, race/ethnicity, smoking status, health insurance, education level, and body mass index (BMI). Based on the literature review, these variables were found to be potential effect modifiers and confounders.[7,10,12] All the variables were noted from the list of calculated variables and the use of the BRFSS codebook and then re-coded. Age (AGE_N) derived from imputed age category (_AGE_G) was re-coded into six level categories ranging from 18 to 24 to 65 or older [Reference: 18-24]; Gender (_SEX) was kept the same as 'Male' and 'Female'

[Reference: Female]. Race/Ethnicity: Non-Hispanic White (_RACEG22_N) was re-coded into ‘Yes’ or ‘No’ [Reference: Yes] which was derived from the (_RACEG22) variable representing the white non-Hispanic race group. Smoking status (SMOK_N) re-coded into ‘Smoker’ and ‘Non-smoker’ [Reference: Non-smoker] was derived from (_RFSMOK3) representing adults who are current smokers. Health insurance (HLTHP_N) was re-coded as ‘Yes’ and ‘No’ [Reference: No] indicating whether adults have some form of health insurance that was derived from (_HLTHPLN). Education level (EDU_N) derived from (_EDUCAG) was re-coded as ‘Did not graduate high school’, ‘Graduated high school’, ‘Attend college or technical school’, ‘Graduated from college or technical school’ [Reference: Did not graduate high school] based on the level of education completed. BMI (BMI_N) derived from (_BMI5CAT) was re-coded as ‘Underweight’, ‘Normal Weight’, ‘Overweight and Obese’, and ‘Missing’ (percentage of missing for BMI was >10%) [Reference: Normal Weight].

Statistical Analysis

To account for the complex sampling design of the BRFSS, specific statistical methods were used for analyses to identify standard error, and confidence intervals that were representative of the target population. The ‘proc survey’ procedure was specifically used for analyzing complex data, applying appropriate weighted analysis. The characteristics of the study population were measured using descriptive statistics. The association between the history of MI and the history of depressive disorder was identified using the chi-square test for bivariate analysis. Logistic regression was used for multivariable analysis to estimate the association between the history of MI and depressive disorder to build the initial model. Furthermore, multivariable logistic

regression analysis was done including the interaction term between the potential effect modifier ‘Age’, and the outcome. This was followed by age stratification while controlling for other covariates in the adjusted model.

All the information on prevalence odds ratio, p-value, and confidence intervals were assessed to check for significance and associations. The R-square test was used for model fit assessment. The tests for statistical significance were 2-tailed with an α level of .05.

All the statistical analyses were done using SAS Studio 3.82 (SAS Institute, Cary, NC).

Ethical Approval

This study used publicly available de-identified public health surveillance data and was therefore not subject to IRB oversight.

Results

In this study, 390,429 met the eligibility criteria after excluding incomplete or missing data.

Table 1 displays the weighted frequencies and adjusted percentages with standard error for the relevant variables from the 2022 BRFSS survey data. This weighted estimate highlights the characteristics of the study population pertinent to studying the association between self-reported depressive disorder and MI history and related risk factors. The weighted data show that the history of depressive disorder, which is the outcome, was reported by 21.19% of the adult US population. Similarly, the exposure

variable, history of MI, was reported by 4.46% of adults. Among the covariates, the largest age group was 65+ years old (23.31%), with 51.19% being female, 59.8% belonging to the Non-Hispanic White race/ethnicity, 12.87% being current smokers, 91.73% having health insurance, 31.69% who graduated from college or technical school, and 63.07% being overweight or obese.

Table 2 displays the distribution and crude association of the characteristics of the study population by outcome which is the history of depressive disorder. It was found that there is a significant positive relationship between a history of MI and a history of depressive disorder, with a prevalence odds ratio (POR) of 1.45 [95% CI: (1.36-1.55)] which means that individuals with a history of MI have 45% higher odds of having a history of depressive disorder compared to those without an MI history. In terms of age, all age groups exhibited significantly lower odds of having a history of depressive disorder compared to the youngest age group of 18-24 years ($p<0.0001$). Males have 51% lower odds of having a history of depressive disorder compared to females [POR=0.49, 95% CI: (0.48-0.51)]. The individuals who do not belong to Non-Hispanic White race/ethnicity have 29% lower odds of having a history of depressive disorder compared to those who belong to Non-Hispanic White race/ethnicity [POR=0.71, 95% CI: (0.68-0.73)]. The individuals who are current smokers have over twice the odds of having a history of depressive disorder compared to the non-smokers [POR=2.02, 95% CI: (1.93-2.10)]. Those with health insurance have 25% higher odds of having a history of depressive disorder compared to those without health insurance [POR=1.25, 95% CI: (1.17-1.33)]. In terms of education level, individuals who attended college or technical school have 11% higher odds of having a history of depressive disorder [POR=1.11,

95% CI: (1.04-1.19)] compared to those who did not graduate high school, while those who graduated high school or graduated from college or technical school had 8% and 23% lower odds of having a history of depressive disorder compared to those who did not graduate high school, respectively. Looking at the BMI, overweight and obese individuals have 14% higher odds [POR=1.14, 95% CI: (1.10-1.19)] of having a history of depressive disorder compared to those with a normal BMI, while underweight individuals have 34% higher odds [POR=1.34, 95% CI: (1.19-1.52)] of having a history of depressive disorder compared to those with a normal BMI.

Testing the interaction between age and history of MI was found to be significant. Backward stepwise regression detected that all the covariates were significant, so none of the variables were excluded from the analysis (data not shown). Age was found to be an effect modifier in this study.

From *Table 3* on multivariable logistic regression analysis stratified by age, various characteristics of the study population were found to be significantly associated with a history of depressive disorder. For all age groups, a history of MI was positively associated with a history of depressive disorder. Specifically, for individuals aged 35-44, having a history of MI was associated with 3.66 times higher odds of depressive disorder, which was the highest out of all age groups. Among different age groups, males consistently had lower odds of depressive disorder when compared to females. Individuals who do not belong to the Non-Hispanic White race/ethnicity also consistently had lower odds of depressive disorder compared to those who belong to the Non-Hispanic White race/ethnicity. Furthermore, smoking status was consistently associated with higher odds of depressive disorder across all age groups. Having health insurance

was associated with higher odds of depressive disorder in most age groups, except for those aged 65 and above. Education level showed varied effects across different age groups, with attending college or technical school being associated with higher odds of depressive disorder, while those who graduated from college or technical school and graduated high school showed a variation of higher and lower odds across the different age groups, compared to those who did not graduate high school. BMI displayed varied effects across age groups, with underweight individuals having higher odds in some age groups and overweight/obese individuals having higher odds in others.

The model fit testing identified the range of R-square values from 0.0243 to 0.0658 among the age groups which is consistently less than the value of 0.2, suggesting a poor model fit.

Discussion

The study investigated the association between a history of MI and the likelihood of having a history of depressive disorder among adults in the United States, using 2022 BRFSS survey data. The findings revealed a significant positive relationship between a history of MI and a history of depressive disorder. It highlights the importance of considering mental health screening and targeted interventions such as therapy, counseling, and medications in individuals with a history of MI to improve health outcomes and overall quality of life.

The initial analysis of this study suggested that all covariates, including age, gender, and other demographic and lifestyle factors, were significantly associated with the

likelihood of having a history of depressive disorder. Subsequent adjustments for age and other confounders in the models, as well as stratifications by age group, revealed more complex relationships, with the significance of certain covariates varying across different age groups. Individuals with a history of MI are more likely to have a history of depressive disorder. Older age groups, males, and individuals not belonging to non-Hispanic white race/ethnicity had a lower likelihood of having depressive disorders. Current smokers and individuals with health insurance had a higher likelihood of having depressive disorders. BMI and education levels of individuals revealed varied effects across different age categories. Most of the findings are consistent with the previous studies which have also demonstrated a significant positive relationship between a history of MI and a history of depressive disorder. [7,10,12] For instance, consistent with previous research, older age groups demonstrated lower odds of depressive disorder.[13] Interestingly, the findings from this study revealed that younger age groups, particularly younger females with a history of MI, may be at heightened risk for depressive disorder, aligning with emerging evidence indicating the vulnerability of this demographic subset.[6,13,14] Moreover, while some studies have found no association between education level and depressive symptoms after MI, this study found that attending college or technical school may be associated with higher odds of depressive disorder, particularly in certain age groups.[13] Additionally, the findings from this study support the prevailing notion that smoking is connected to feeling depressed among individuals with a history of heart attack, but not all studies show this link.[14] These findings highlighted the variation of risks among different categories in the covariates suggesting the importance of considering demographic and lifestyle factors when assessing the risk of

depressive disorders in individuals with a history of MI and planning targeted interventions.

There are certain strengths and limitations of this study. The sample size is large which allows for generalizability of the finding to the adult US population. The complex survey sampling design, identification of potential effect modifiers, and inclusion of potential confounders increased the validity of the study. While this study identified several factors that may influence the association between exposure and outcome, it is important to note that other potential confounders such as comorbidities and access to healthcare were not included in this analysis.

Variables such as the use of antidepressant medication, socio-economic status, and revascularization history could also potentially confound the association between MI history and depressive disorder.[10,12,15] Unfortunately, these variables were not available in the BRFSS 2022 dataset, and therefore could not be included in the analysis. In addition to these missing variables, there are numerous limitations of this analysis. First, the use of cross-sectional study design provides insight into the relationship between an exposure and an outcome, but it limits the ability to establish causal relationships. Second, the study uses self-reported data which may be subject to recall and social desirability bias. Either underreporting or overreporting of the information by participants in the survey can potentially lead to misclassification that affects the overall validity of the result.

Efforts such as screening for depression both during hospital stays and follow-up visits should be improved, and emphasis should be made on the treatment. Public health policies should focus on addressing these factors through collaboration between

primary care providers and mental health specialists to ensure comprehensive care and reduce the burden of depressive disorders in the US. While the study provides valuable insights into the association between the history of MI and a history of depressive disorder among US adults, the model's strength is limited by the absence of certain variables in the BRFSS 2022 dataset. Future studies should consider incorporating those above-mentioned variables to provide a more comprehensive understanding of the association.

Conclusion

In conclusion, the study adds to the existing literature by demonstrating a significant association between a history of MI and a history of depressive disorder among US adults. The findings underscore the importance of addressing mental health issues in individuals with a history of MI and suggest that targeted interventions may be beneficial in improving overall health outcomes in the population. Future research may aim to address the limitations of this study and better understand the mechanisms underlying this association.

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Table 1: Descriptive characteristics of the study population: BRFSS 2022 (n= 390,429)

Variables	N	Weighted Percentage (%) (±SE*)
History of Depressive Disorder		
Yes	82,437	21.19 (0.13)
No	307,992	78.81 (0.13)
History of Myocardial Infarction		
Yes	22,224	4.46 (0.06)
No	368,205	95.54 (0.06)
Age (years)		
18-24	21,304	10.78 (0.12)
25-34	42,222	17.28 (0.14)
35-44	52,583	16.78 (0.13)
45-54	58,200	15.35 (0.12)
55-64	73,094	16.50 (0.12)
65+	143,026	23.31 (0.13)
Gender		
Male	183,760	48.81 (0.17)
Female	206,669	51.19 (0.17)
Race/Ethnicity: Non-Hispanic White		
Yes	286,192	59.80 (0.17)
No	93,985	40.20 (0.17)
Smoking Status		
Smoker	47,421	12.87 (0.11)
Non-smoker	343,008	87.13 (0.11)
Health Insurance		
Yes	370,113	91.73 (0.11)
No	20,316	8.27 (0.11)
Education Level		
Did not graduate high school	21,153	10.96 (0.14)
Graduated high school	92,523	26.74 (0.15)
Attend college or technical school	106,374	30.60 (0.16)
Graduated from college or technical school	169,211	31.69 (0.14)
Body Mass Index (BMI)		
Underweight	5,962	1.74 (0.05)
Normal Weight	106,820	27.82 (0.16)
Overweight + Obese	252,702	63.07 (0.17)
Missing	24,945	7.37 (0.10)

N = Frequency; *±SE = Standard Error of Percent

Table 2: Distribution and crude association of the characteristics of the study population by history of depressive disorders: BRFSS 2022 (n= 390,429)

Variables	History of Depressive Disorder		
	Yes N (Weighted %)	No N (Weighted %)	Crude Prevalence Odds Ratio (95% CI)
History of Myocardial Infarction			
Yes	5,754 (5.83)	16,470 (4.09)	1.45 (1.36, 1.55)
No	76,683 (94.17)	291,522 (95.91)	Reference
Age			
18-24	5,898 (7.15)	15,406 (5.00)	Reference
25-34	11,369 (13.79)	30,853 (10.02)	0.92 (0.87, 0.98)
35-44	13,012 (15.78)	39,571 (12.85)	0.77 (0.72, 0.82)
45-54	13,414 (16.27)	44,786 (14.54)	0.69 (0.65, 0.73)
55-64	16,158 (19.60)	56,936 (18.49)	0.71 (0.67, 0.75)
65+	22,586 (27.40)	120,440 (39.10)	0.51 (0.48, 0.54)
Gender			
Male	27,971 (35.20)	155,789 (52.47)	0.49 (0.48, 0.51)
Female	54,466 (64.80)	152,203 (47.53)	Reference
Race/Ethnicity: Non-Hispanic White			
Yes	17,295 (33.77)	76,690 (41.93)	Reference
No	63,266 (66.23)	222,926 (58.07)	0.71 (0.68, 0.73)
Smoking Status			
Smoker	15,495 (19.92)	31,926 (10.98)	2.02 (1.93, 2.10)
Non-smoker	66,942 (80.08)	276,066 (89.02)	Reference
Health Insurance			
Yes	78,418 (92.97)	291,695 (91.39)	1.25 (1.17, 1.33)
No	4,019 (7.03)	16,297 (8.61)	Reference
Education Level			
Did not graduate high school	5,060 (6.15)	16,093 (5.24)	Reference
Graduated high school	19,459 (23.65)	73,064 (23.80)	0.92 (0.86, 0.99)
Attend college or technical school	25,490 (30.99)	80,884 (26.35)	1.11 (1.04, 1.19)
Graduated from college or technical school	32,256 (39.21)	136,955 (44.61)	0.77 (0.72, 0.82)
Body Mass Index			
Underweight	1,425 (1.73)	4,537 (1.47)	1.34 (1.19, 1.52)
Normal Weight	20,078 (24.36)	86,742 (28.16)	Reference
Overweight + Obese	56,205 (68.18)	196,497 (63.80)	1.14 (1.10, 1.19)
Missing	4,729 (5.74)	20,216 (6.56)	0.85 (1.34, 1.19)

N = Frequency; CI = Confidence Interval

Table 3: Adjusted Multivariable Logistic Regression Analysis, stratified by age: Impact of characteristics of the study population on history of depressive disorder: BRFSS 2022 (n=390,429)

Variable	Crude POR (95% CI)	25-34 Adjusted POR (95% CI)	35-44 Adjusted POR (95% CI)	45-54 Adjusted POR (95% CI)	55-64 Adjusted POR (95% CI)	65+ Adjusted POR (95% CI)
History of Myocardial Infarction						
Yes	1.45 (1.36, 1.55)	3.11 (1.58, 6.12)	3.66 (2.68, 4.98)	2.44 (2.02, 2.96)	2.21 (1.92, 2.54)	1.48 (1.34, 1.62)
No	Reference	Reference	Reference	Reference	Reference	Reference
Gender						
Male	0.49 (0.48, 0.51)	0.44 (0.40, 0.47)	0.45 (0.42, 0.49)	0.40 (0.37, 0.44)	0.40 (0.37, 0.43)	0.48 (0.45, 0.51)
Female	Reference	Reference	Reference	Reference	Reference	Reference
Race/Ethnicity: Non-Hispanic White						
Yes	Reference	Reference	Reference	Reference	Reference	Reference
No	0.71 (0.68, 0.73)	0.55 (0.51, 0.60)	0.58 (0.54, 0.64)	0.65 (0.59, 0.71)	0.70 (0.63, 0.77)	0.84 (0.76, 0.92)
Smoking Status						
Smoker	2.02 (1.93, 2.10)	1.91 (1.70, 2.15)	2.12 (1.93, 2.34)	2.12 (1.91, 2.35)	1.99 (1.80, 2.19)	1.82 (1.64, 2.01)
Non-smoker	Reference	Reference	Reference	Reference	Reference	Reference

Health Insurance						
Yes	1.25 (1.17, 1.33)	1.32 (1.16, 1.51)	1.28 (1.10, 1.48)	1.36 (1.14, 1.61)	1.41 (1.19, 1.68)	0.98 (0.74, 1.31)
No	Reference	Reference	Reference	Reference	Reference	Reference
Education Level						
Did not graduate high school	Reference	Reference	Reference	Reference	Reference	Reference
Graduated high school	0.92 (0.86, 0.99)	1.09 (0.90,1.30)	1.07 (0.89, 1.29)	0.70 (0.58, 0.83)	0.60 (0.51, 0.69)	0.75 (0.75, 0.88)
Attend college or technical school	1.11 (1.04, 1.19)	1.33 (1.10, 1.59)	1.51 (1.26, 1.83)	0.81 (0.68, 0.96)	0.77 (0.66, 0.90)	0.87 (0.74, 1.01)
Graduated from college or technical school	0.77 (0.72, 0.82)	0.87 (0.72, 1.04)	1.05 (0.87, 1.27)	0.62 (0.52, 0.74)	0.60 (0.451, 0.69)	0.79 (0.68, 0.92)
Body Mass Index						
Underweight	1.34 (1.19, 1.52)	1.14 (0.85, 1.53)	1.28 (0.88, 1.85)	0.91 (0.61, 1.36)	1.43 (1.01, 2.04)	0.98 (0.75, 1.27)
Normal Weight	Reference	Reference	Reference	Reference	Reference	Reference
Overweight + Obese	1.14 (1.10, 1.19)	1.21 (1.11, 1.33)	1.37 (1.25, 1.51)	1.42 (1.27, 1.58)	1.39 (1.25, 1.54)	1.43 (1.32, 1.55)
Missing	0.85 (1.34, 1.19)	0.65 (0.55, 0.78)	0.81 (0.65, 0.99)	0.85 (0.71, 1.02)	0.84 (0.69, 1.01)	1.19 (1.01, 1.40)

POR: Prevalence Odds Ratio; CI: Confidence Interval

Appendices

Appendix 1: Biography

Appendix 2: Resume

Appendix 1

Biography

Sonika Khanal is currently an MPH student with a focus on Epidemiology at the University of Nebraska Medical Center College of Public Health. She is working as a Graduate Assistant at the Nebraska Department of Health and Human Services, playing a key role in the Vaccine-Preventable Disease Surveillance Program. Her current efforts in data collection, analysis, and reporting are directly linked to her capstone project where she explores the prevalence of depressive disorders among US adults and the association between a history of Myocardial Infarction and depressive disorders, considering various demographic and lifestyle factors. She began her journey in healthcare in Nepal after graduating with a Bachelor of Dental Surgery from Kathmandu University. She practiced as a Dental Surgeon expanding her skillset in Nepal. With her clinical background and experience in health, she is poised to make a significant impact on the public health sector both locally and globally.

DR. SONIKA KHANAL

soni.99knl23@gmail.com | 307-343-6303 | www.linkedin.com/in/dr-sonika-khanal

Appendix 2

WORK EXPERIENCE

GRADUATE ASSISTANT, NEBRASKA DEPARTMENT OF HEALTH AND HUMAN SERVICES, **NE, USA** | AUGUST 2023 – Present

- Working as a Graduate Assistant in Vaccine-Preventable Disease Surveillance Program
- Perform data collection, cleaning/organizing, analyses, and creating reports/visualizations related to vaccine-preventable disease topics for website
- Identify vaccine-preventable disease incidence and vaccine coverage rates in Nebraska

RURAL FELLOW, RURAL PROSPERITY NEBRASKA, **NE, USA** | MAY 2023 – JULY 2023

- Served as a Rural Fellow in City Hall, North Platte with training in inclusive community leadership
- Conducted Community Needs Assessment and Housing analysis at North Platte

DENTAL SURGEON, **PREMIER DENTAL PVT. LTD., NEPAL** | MAY 2020 – MAY 2021

- Oral health consultations, patient management, diagnosis of dental diseases, and treatment planning through clinical check-ups and investigations
- Oral prophylaxis, minor surgical procedures, restorations, root canal treatments, prosthetic teeth fabrication and placement
- Participation in free oral health camps conducted by the clinic

DIGITAL PROSTHETIC DESIGNER, **HIMALAYAN DIGITAL CENTRE PVT. LTD. (NEPAL BRANCH OF DENTIUM CO. LTD, SEOUL, SOUTH KOREA)** | DECEMBER 2018 – APRIL 2020

- Received training on the use of EXO-CAD and 3Shape software for digital prosthesis design
- Designed abutments, crowns, and surgical guides for dental implants through use of the software
- Supervised other dental technicians and dental laboratory assistants

DENTAL SURGEON, **KATHMANDU MEDICAL COLLEGE AND TEACHING HOSPITAL, NEPAL** | SEPTEMBER 2018 – DECEMBER 2018

- Volunteered as a Medical Officer in the Dental Department
- Diagnosed dental diseases, created treatment plans, and performed several dental procedures
- Participated in dental camps

EDUCATION

MASTER OF PUBLIC HEALTH, EPIDEMIOLOGY, **UNIVERSITY OF NEBRASKA MEDICAL CENTER, OMAHA, NEBRASKA | MAY 2024 (EXPECTED)**

- Current GPA: 4.0

BACHELOR OF DENTAL SURGERY, **KATHMANDU UNIVERSITY SCHOOL OF MEDICAL SCIENCES, NEPAL | 2018**

- Honors: 2014 Recipient of Civil Servant Children Scholarship Nepal provided by the Government of Nepal, Ministry of General Administration

SKILLS

- Microsoft Office Suite (Access, Excel, et cetera)
- IBM SPSS Statistics Software
- SAS programming
- RStudio
- REDCap
- Tableau
- Language Proficiency: English, Nepali, Hindi