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Quality of Life, Discrimination Experience and Associated Factors among Asian American Nursing Staff in the U.S. during the COVID-19 Crisis

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Aims: To investigate Asian American nursing staff's overall quality of life (QoL), discrimination experience and the contributing factors during the Coronavirus disease 2019 (COVID-19) pandemic.
Study Design: Cross-sectional survey.
Place and Duration of Study: Participants were recruited from national and state-wide nursing organizations in the United States of America to complete online survey between October - December 2020.
Methodology: A convenience sampling approach was adopted for the study. Sample: we recruited 98 Asian American nursing staff (86% female) from six ethnic groups, including Chinese, Filipinos, Indian, Japanese, Korean, and Vietnamese. Valid and reliable measures were used to assess theoretical constructs related to the Vulnerable Populations Conceptual Framework (resources

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availability, relative risk, health status/QoL). We also conducted descriptive statistics, ANOVA and multiple regression analyses using IBM® SPSS® Statistics 27.0. For the open-ended survey responses, we used thematic content analysis to analyze the qualitative data. Discrepancies in the interpretation were resolved by reaching a consensus among the four researchers.

Results: The mean QoL score of the participants was 69.93 (SD = 13.22), with females demonstrating better QoL than males. Ethnicity was marginally, significantly associated with QoL (*P* =.06), Moreover, 22% of the participants experienced discrimination and 49% of them reported witnessed discrimination, with race/ethnicity reported as the most common reason. Their QoL was negatively associated with witness discrimination (*P* =.003), while positively associated with social support (*P* < .001) and resilience (*P* =.001).

Conclusion: Our findings provide a timely understanding of AA nursing staff's discrimination experience and factors associated with their QoL during this challenging time. Tailored interventions to mitigate discrimination, strengthening social support and coping strategies to promote resilience are needed to promote QoL among AA nursing staff.

Keywords: Asian American; COVID-19; discrimination; nursing staff; quality of life.

1. INTRODUCTION

The impact of the Coronavirus disease (COVID-19) outbreak on U.S. health systems and health-care providers was substantial. Nursing staff are usually the first responders in the fight against the pandemic and at the core of healthcare, which also makes them face a higher risk of infection and poor health outcomes. In particular, Asian American (hereafter AA) nursing staff, as a critical group in the U.S. nursing workforce, were found disproportionately affected by the pandemic. While comprising only about 7.5% of the Registered Nurse (RN) population and 2.6% of the Licensed Practical Nurses (LPN) or Licensed Vocational Nurses (LVN) in the country, AA nursing staff had higher proportion of COVID-related infections and deaths compared to their white counterparts [1,2].

Besides, facing COVID-19 and racism, AA nursing staff reported that this dual pandemic intensified the existing inequities and vulnerabilities [3]. A Pew Research survey showed more than 30% of the AA respondents expressed fear due to the violence and abuse against them, and over 70% of the adults in the U.S. reported seeing discrimination against Asians [4]. Similarly, the escalation of COVID-19 related stigma and anti-Asian discriminatory incidents, such as bigoted and biased remarks or refusing treatment and care provided by AA personnel also became part of the burden AA healthcare providers endured at work and in life. Psychological effects such as anger and sadness reported by them resulting from the discrimination experience could last a long time [5].

In addition to the increasing burnout AA nursing staff experienced during the pandemic, healthcare workers with minority backgrounds also reported high likelihood of limited access to personal protective equipment (PPE), reusing PPE, and working in healthcare settings with higher risk of COVID-19 exposure [2]. Inadequate resources and staffing, higher workloads, poor working conditions, and lack of organizational support during the pandemic crisis could all add to the negative experience and bring about deleterious impact on AA nursing staff's wellbeing, such as stress, anxiety, burnout, and sleep difficulties, and that could further affect their work performance and job satisfaction [6]. On the other hand, perceived social support from family or friends was determined a possible protective factor against the effect of discrimination on mental health [7]. Support among peers or work colleagues also may be essential for protecting nurses from adverse events at work [8].

Nonetheless, there was a lack of understanding and culturally appropriate strategies to address the challenges that AA nursing staff have encountered during the pandemic. This study used the Vulnerable Populations conceptual framework [9] as a guide to examine resource availability (perceived social support, resilience coping, medical supply), relative risk (perceived risk infection, fear of the COVID-19 pandemic, discrimination) during and beyond the COVID-19 pandemic in relation to health status (Quality of Life) among AA nursing staff (Fig. 1). The framework indicates that vulnerability is usually the outcome of mixed driving factors and is related to ethnicity, age, gender identity, poverty,

etc.; the framework also highlights the importance of addressing resource availability and risk exposure in promoting health and ensuring wellbeing [9]. People who are vulnerable are more likely than others to develop health problems and negative health outcomes. The framework demonstrates the dynamic interrelationships among the availability of resources, relative risk, and health status. Both resources inadequacy and increased relative risk may increase susceptibility for individuals to develop adverse health consequences. Negative health status may also exacerbate risk exposures and consequently result in resource depletion.

Thus, identifying the risks AA nursing staff faced at work and in life and the critical resources available to them will facilitate understanding of the profound impact associated with the pandemic and allocating essential and effective resources to address their unmet needs.

This paper aimed to describe AA nursing staff's relative risks (perceived risk of infection, fear of COVID-19, discrimination), resource availability (perceived social support, resilience coping, medical supply), their QoL and the relationships among these variables. We hypothesized positive influence of resource availability (perceived social support, resilience coping, medical supply), and negative influence of relative risks (perceived risk of infection, fear of COVID-19, discrimination) on AA nurses' overall functioning and health.

2. MATERIALS AND METHODS

2.1 Design, Sample, Sampling, and Procedures

A descriptive, cross-sectional survey was used to explore AA nursing staff's overall QoL during the pandemic and examine the factors influencing their QoL. Eligibility criteria were: (1) >=18 years old; (2) able to speak, write and understand English; and (3) self-identified as Asian American nursing staff (including certified nursing assistant/CNA, licensed practical nurse (LPN), licensed vocational nurse (LVN), registered nurses/RN, advanced practice nurses/nurse practitioner/APRN) currently working in the U.S.A. CNAs are not licensed but serve a role as nurses assistants or nurse' aids, their practice is under RN's supervision and primarily take care of patients' daily living activities. To be more inclusive, we used "nursing staff" instead of "nurses" in the study.

After receiving approval from our Institutional Review Board (IRB), anonymous, self-report survey data were collected via Research Electronic Data Capture (REDCap) [10] platform between October and December 2020.. Study flyers were distributed to national and local nursing organizations (e.g., Asian American Pacific Islander Nurses Association). Participants clicked the survey link or scanned the QR code on the flyer to join. Each participant received $5 e-gift card to demonstrate appreciation for their time and effort.

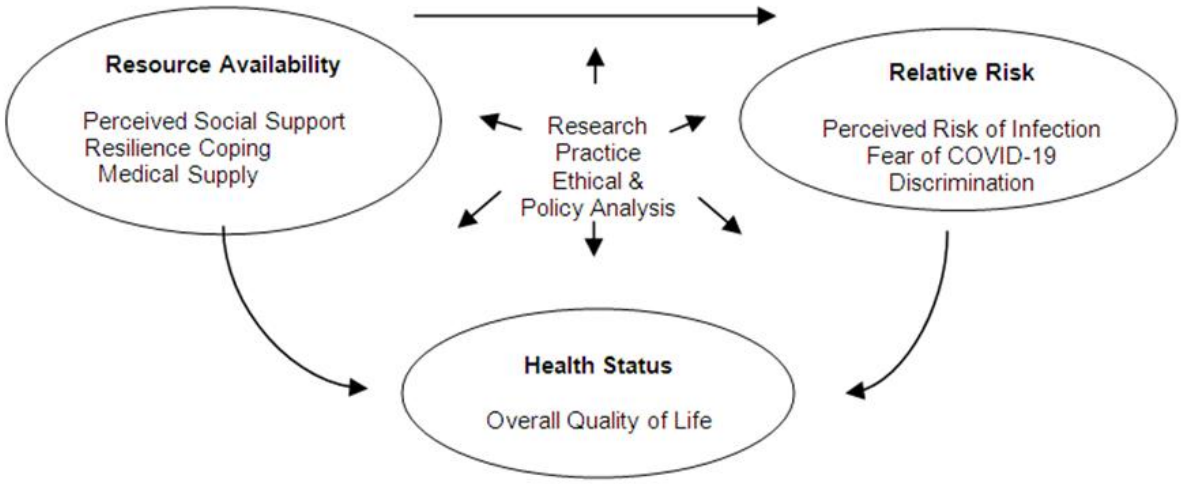

Fig. 1. Vulnerable Populations Conceptual Framework

2.2 Measures

2.2.1 Socioeconomic characteristics

Questions included participants' age, gender, state of residence, workplace setting, race/ethnicity, highest degree attained, nurse licensure, years of work, work settings, and PPE at workplace.

2.2.2 Overall quality of life

We used the Short Form Health Survey (SF-20) to measure the overall QoL. It is a 20-item scale in which six domains of health status: mental health (5), physical functioning (6), role functioning (2), social functioning (1), general health perceptions (5), bodily pain (1) were used to assess individuals' overall health. High value indicates better functioning and health. Scores of each domain are transformed, combined, and averaged to a final score of a scale (0-100). Higher scores indicate better functioning and well-being. This scale was well developed and demonstrated strong psychometric properties in large population studies [11].

2.2.3 Perceived social support

We measured AA nursing staff's social support with the Perceived Social Support Scale. The scale consists of 18 items and four subscales assessing different types of support, including emotional/informational (8), tangible (4), affectionate (3 items), and positive social interaction (3). Participants rate the frequency of availability of each kind of support on a scale from 0 (never) to 3 (mostly), mean item response was obtained for each subscale, with a higher score indicating more perceived support. Prior research has suggested satisfactory reliability and construct validity of the scale [12].

2.2.4 Resilience coping

Resilience coping was measured by the Brief Resilience Coping Scale, a 4-item scale developed for measuring an individual's tendency to cope with stress in a highly adaptive manner. Responses ranged from 1 (describe me not at all) to 5 (describe me very well), response scores are summed and with scores of 4-13, 14-16, and 17-20 suggesting low, medium, and high level of resilient coping, respectively. Prior research has demonstrated psychometric robustness [13].

2.2.5 Perceived risk of infection

One question "what is the risk that you may be infected with COVID-19" was used to assess perceived risk of acquiring COVID-19. The score ranged from 1 (very unlikely) to 5 (very likely).

2.2.6 Fear of COVID-19

Fear of COVID-19 Scale consists of seven items that assess one's fear of COVID-19. The total possible score could range from 7 to 35 with respondents identifying their level of agreement varied from 1 (strongly disagree) to 5 (strongly agree). A higher total score indicates a greater fear. Previous studies supported good psychometric properties and its effectiveness in evaluating mental health effects of COVID-19 outbreak [14].

2.2.7 Discrimination

The discrimination scale was modified from the national Stop AAPI Hate survey for tracking the Anti-Asian incidents [15]. The survey consists of eight multiple-choice questions and six open-ended questions that assess discrimination at work and in life. Respondents rate the item 0 as "No" or 1 as "Yes" to indicate the existence of discrimination experiences, witness at the scene and witness intervene. Details about the discrimination type, places of discriminatory incidents, influences of discrimination, suspected reasons for the incidents, witness response and efforts countering discrimination are encouraged to add in the text format.

2.3 Analysis

2.3.1 Quantitative analysis

The survey data in REDCap [10] was downloaded into software IBM SPSS Statistics (version 27.0) for the analysis. We used descriptive statistics (percentage, mean, standard deviation) to describe characteristics of the participants and key measures; one-way analysis of variance (ANOVA) to examine QoL differences by sociodemographic factors; and multiple regression to investigate key factors associated with QoL scores among AA nursing staff. Given the small sample size in the study, a p-value less than 0.10 was considered statistically significant.

2.3.2 Qualitative analysis

Thematic content analysis was used to analyze the open-ended survey questions regarding discrimination the respondents witnessed or

experienced. Common themes were identified from the free-text answers to address characteristics of the experiences, its impact, and relevant responses, as well as support or resources available for addressing discrimination. Further discussions were generated whenever there was a discrepancy in the interpretation and differences were resolved by reaching a consensus among the four researchers.

3. RESULTS

3.1 Participant Characteristics

A total of 98 Asian American nursing staff from six ethnic groups participated in the study: Chinese (58.2%), Koreans (26.5%), Filipino/a (10.2%), Vietnamese (3.1%), Indian and Japanese (2.0%). The majority of them aged 26 to 45 (88.8%), with 85.7 % females, and 39.4 % having bachelor's degree and 22.3 % with master's degree. Among them, around 48% were RNs, 11% were advanced practice nurses, 29% were LPNs or LVNs, and 12% were CNAs. The average years of work was around 9 years (SD = 6.75, range = 1-40); 7.4% working in acute care facilities, including acute care hospital, emergency room, critical care unit, and intensive care unit. The participants' sociodemographic information is presented in Table 1.

3.2 Quality of Life, Resources, Relative Risks

The mean QoL score, measured by SF-20, was 69.63 (SD = 13.22, range 0-100). Regarding supportive resource, AA nursing staff perceived social support was 38.02 (SD = 9.43, range 0-54) and had resilience score of 14.44 (SD = 2.60, range 4-20). The majority (95%) of our participants reported sufficient supply of PPE at work places. For relative risk variables, the respondents demonstrated fear of COVID-19 (M = 22.57, SD = 5.12, range 7-35) and perceived risk for the infection (M = 3.22, SD = 1.15, range 1-5). Regarding the discrimination experience, 21 participants reported experiencing any prejudice or discrimination associated with race/ethnicity in their personal life and/or at the workplace during the pandemic, 46 respondents reported having witnessed and/or heard about incident(s) of prejudice or discrimination associated with race/ethnicity. Demographics characteristics of the study participants and summary statistics of the key measures and outcomes are presented in Table 1 and 2, respectively. Table 3 showed the QoL varied by ethnic group, gender, and work setting. The findings suggest that Vietnamese participants had the highest values (M =78, SD = 6.56) among all ethnic groups; Compared to male participants (M= 68.69; SD = 9.96), females had slightly better QoL (M = 69.75; SD =13.77), although the difference was not significant ($t(95) = 0.27$, $P = .80$). The only participant who was self-identified as transgender reported a QoL score of 72. Additionally, the nursing staff working in non-acute settings reported higher QoL (M = 70.57, SD = 13.27) compared to those working in acute care facilities (M = 62.14, SD = 10.90); the difference was not statistically significant ($t(92) = 1.64$, $P = .11$).

The model presented in Table 4 examined the relationship between key variables (perceived social support, resilience, perceived risk of infection, fear of COVID, discrimination experience) and QoL. In addition to the above findings, ethnicity was marginally, significantly associated with QoL ($F (5, 92) = 2.246$, P =.06), while gender and working settings were insignificant (P = .950, P = .105, respectively). Across AA ethnic groups, witness discrimination was associated with worse QoL (B = -6.61, P =.003); higher level of resilience (B = 1.25, P =.001) and social support (B = .53, P < .001) were associated with better QoL. The findings supported our hypotheses of the positive influence of resource availability and the negative influence of relative risks on AA nurses' overall functioning and health.

3.3 Qualitative Findings on Discrimination, Support and Resources

Since Indian, Japanese, and Vietnamese nurse participants did not provide any descriptive narratives for the open-ended survey questions, we present qualitative data findings from Chinese, Filipino and Korean participants in the following.

3.3.1 Discrimination witnessed

Of the 94 participants who provided responses to qualitative questions, about 21.3% of those who witnessed discrimination disclosed the places where discrimination occurred, information about other witnesses at the scene, and suspected reason for the incidents. Among those who disclosed, 16 of them identified support or resource for the discrimination experience and five participants revealed the influences of the events. Fifteen participants reported someone else witnessed the incidents, while only one reported that the witness she saw intervened at

the scene. One Chinese RN from Florida said, “security person came in to talk to the discriminator and asked her to leave the store.”

3.3.2 Discrimination experienced

For the 21 participants who experienced discrimination, all indicated places of the discrimination and, suspected reasons for the incidents; five of them further described the impact and additional support or resources they sought in response to the incident.

3.3.3 Suspected reason and discrimination sites

Race and ethnicity were rated as the top suspected reasons for discrimination. Workplace was reported as the most common places for the discrimination incidents, public transit and grocery stores also were mentioned often, followed by place of worship, university, private residence, public street and online. The majority of participants selected more than one area of discrimination. However, incident details only were provided by participants who experienced discrimination at work or restaurants, such as having unfair work assignment or disclosure of personal health information without consent. One participant expressed, “I felt angry that there were HIPAA violations. I was confused about how so many co-workers knew I was out sick and was tested for COVID.” One nurse reported that she was discriminated against in a restaurant and said, “I went to a restaurant to eat, and a white man asked me to leave, saying that I had COVID-19 virus.”

3.3.4 Discrimination impact

Feeling “sad”, “bored”, “ angry”, “ speechless”, “uncomfortable", and “stressed” were the most prevalent descriptors AA nursing staff shared about how the incident made them feel. Hearing about incidents of prejudice or discrimination associated with their ethnicity also made them feel more tired from work, and affected their mood status, motivation to work and patient care. They explained, “I felt afraid to greet patients in the pre-operative area. I feared that patients would reject my care because I was Asian,” “It's an injustice and makes me upset that we can be stereotyped and be treated so poorly based on looks or ethnicity. It's sad that people would treat medical staff in such a way just for caring,” “When I care for patients, I try not to consider this possibility, but it's always in my mind.”

Concerns expressed in the study also centered on how the nation, the organization they belonged to, and AA nursing staff themselves could respond to the discrimination incidents. A Filipino nurse said “it has made me feel a lack of support from those in positions of power such as our government. It has felt as if the government has encouraged these behaviors. Workplace discrimination could be subtle and occur without conscious intent. One nurse working in an acute care hospital mentioned, “I understand coworkers are joking… It made me feel uncomfortable at times even though it doesn't happen often and not everyone is doing this to me, and we still work well as a team. I don't feel discriminated, but I would prefer not to joke about my ethnic backgrounds.” The nurse also expressed concerns regarding how discrimination may affect future employment, “…incident makes me do not want to disclose my ethnic background, I need new assignment, I feel my backgrounds may become a disadvantage in HR process or interviews.”

3.3.5 Individual and organizational responses

Hiding ethnic background was one of the strategies that AA nursing staff adopted to prevent the incidents. Other strategies, such as masking and social withdrawal were also reported. One nurse said, “I continue to have an underlying fear that people of non-Asian descent subconsciously do not want to be near me. When I am around coworkers, I will always keep my mask on, and I socialize with them less.” Another nurse argued that she did not change her behavior as she did nothing wrong, although she would avoid the racist person and try not to dispute with him. Pretending like nothing happened was another way that AA nursing staff coped with discrimination. One nurse said, “I had to act like I am ok and wish nobody [would] joke about my background anymore.”

Of the 17 participants who shared their source of support, 13 of them (76.5%) referred to co-workers, friends, and families as their source of support when they experienced racism and discrimination from patients; this was more than triple the number of those who sought help from their supervisors. Support from friends and families was considered important in helping them cope with discrimination. It was also indicated by one of the participants that “my colleagues and friends, they make me strong” and another nurse “co-worker and family are supportive.” Despite the prevalence of discrimination experiences, AA nursing staff had

and its negative impact on their work and life, few described the role of workplace in responding to the racist behaviors. Two respondents stated, "they state that they have zero tolerance for racism" and "disciplinary action" respectively when reflecting on how their workplace handled the discrimination incidents.

4. DISCUSSION

Since the outbreak of pandemic and associated hate crimes, the double vulnerability AA nursing staff had experienced had made such an opportunity to examine AA nursing staff's QoL and the critical factors associated with their health outcomes in the COVID-19 context. Utilizing the concept arising from the Vulnerable Populations Conceptual Framework [9] to assess the availability of resources, relative risk, and overall QoL in AA nursing staff, the findings may inform tailored interventions and policy solutions for reducing the health disparities that they have experienced.

Table 1. Demographics characteristics of the study participants (N=98)

Variable	Range	M	SD	(n, %)	Missingness (%)
Age Groups					0.0
18-25				3 (3.1)	
26-30				21 (21.4)	
31-35				34 (34.7)	
36-40				19 (19.4)	
41-45				13 (13.3)	
46-50				5 (5.1)	
56-60				1 (1.0)	
≥ 61				2 (2.0)	
Gender					0.0
Male				13 (13.3)	
Female				84 (85.7)	
Transgender				1 (1.0)	
Ethnic Groups					0.0
Chinese				57 (58.2)	
Korean				26 (26.5)	
Filipino/a				10 (10.2)	
Vietnamese				3 (3.1)	
Indian				1 (1.0)	
Japanese				1 (1.0)	
Highest Degree					4.1
Diploma				5 (5.3)	
Associate				21 (22.3)	
Bachelor				37 (39.4)	
Master				21 (22.3)	
Post-Master				7 (7.4)	
Doctorate-DNP				2 (2.1)	
Doctorate-PhD				1 (1.1)	
Work Titles					0.0
Advanced practice nurse				11(11.2)	
CNA				12(12.2)	
LPN/LVN				29 (29.6)	
RN				48 (48.9)	
Work Settings (Acute: ER, ICU etc.)				7 (7.4)	4.1
Years of Work	1-40	8.90	6.75		4.1

M = mean; SD = standard deviation; DNP = Doctor of Nursing Practice; PhD = Doctor of Philosophy; CNA = certified nursing assistant; LPN= licensed practical nurse; LVN= licensed vocational nurse; RN= registered nurses; ER = emergency room; ICU = intensive care unit

Table 2. Summary statistics of key study variables (N=98)

Variable	Range	M	SD	(n, %)	Missingness (%)
QoL (SF-20)	0-100	69.63	13.22		0.0
Perceived Social Support	0-54	38.02	9.43		4.1
Resilience	4-20	14.44	2.60		4.1
Perceived Risk	1-5	3.22	1.15		2.0
Fear of COVID	7-35	22.57	5.12		4.1
Discrimination					4.1
Experienced				21 (22.3)	
Witnessed				46 (48.9)	

M = mean; SD = standard deviation

Table 3. QoL by ethnic group, gender and working settings (N=98)

		SF-20 (mean ± SD)
Ethnic group	Chinese	67.67 ± 11.86
	Filipinos	69.30 ± 23.04
	Indian	40
	Japanese	73
	Korean	74.12 ± 9.17
	Vietnamese	78 ± 6.56
Gender	Male	68.69 ± 9.96
	Female	69.75 ± 13.77
	Transgender	72
Work setting	Acute	62.14 ± 10.90
	Non-Acute	70.57 ± 13.27

S.E. = standard error. Acute work settings included acute care hospital, emergency room, critical care unit, intensive care unit. The number of study participants in Indian, Japanese, and Vietnamese groups were 1, 1 and 3, respectively

Table 4. Multiple regression estimates of resource availability, relative risk and quality of life among AA nursing staff (N=98)

Resource Availability	B	S.E.	Beta
Social support	0.53**	0.13	0.41
Resilience	1.25*	0.37	0.28
Relative Risk			
Perceived risk	-1.25	0.81	-0.12
Fear of COVID	-0.03	0.20	-0.01
Discrimination witnessed	-6.61 *	2.15	-0.29
Discrimination experienced	-1.585	2.440	-0.056
Sociodemographic Characteristics			
Age	0.54	1.02	0.07
Gender	3.05	2.58	0.09
Education	-1.13	0.84	-0.11
Years of work	0.06	0.23	0.03
Working facility	2.19	3.68	0.05
Ethnic groups	0.39	0.48	0.063
Constant	34.18*	11.93	
F-statistic	9.64**		
Adjusted R^2	0.54		
N	98		

*S.E. stands for standard error; *P <.01, **P <.001*

4.1 Resource Availability

4.1.1 Perceived social support

In addition to co-workers' whom the majority of the participants indicated as a critical source of support when encountering discrimination, family members and friends were also mentioned as a source of support. Prior research indicated the similar findings. The support and care medical staff gained from their family members and friends showed benefits in terms of reduced stress and anxiety, improved sleep conditions, self-efficacy, professional achievement, and absenteeism [16]. Sharing discrimination experience with family members also helped to ease the psychological burden AA had developed following the adversity [17]. Social interactions, emotional support, and their subsequent effects all possibly contribute to AA nursing staff's improved coping mechanisms when they were under stress.

The influence of organizations or institutions was critical with respect to maintaining a healthy working environment. Influences such as obtaining support from coworkers and supervisors was found to be significantly related to low levels of nurses' burnout and higher levels of their job satisfaction. Supportive and educational events held by the workplace such as stress management programs or training workshops could be beneficial, medical staff who joined the events shared positive responses related to improved work effectiveness and psychosocial wellness [18,19]. Although few of our participants asked help from their supervisors, addressing the role of nurses' immediate supervisors in nurturing a positive working climate and fostering quality of healthcare is critical.

4.1.2 Resilience coping

In addition to social support, our findings also conformed with previous research that highlighted beneficial contribution of resilience to better QoL [20,21]. In the crisis of two interconnected and pressing pandemics, the COVID-19 outbreak and discrimination, developing the capacity to recover from adversity and acquire necessary resources to combat the challenges would enable AA nursing staff to better ease their burden, adapt to changes and promote their health.

In the current study, lack of confidence and feeling unsure about how to respond to the discrimination issues were found common among the participants. Avoiding unnecessary interactions with racist persons, hiding ethnic background from colleagues, and pretending like nothing happened were the common approaches AA nurses preferred to adopt after experiencing discrimination. Besides, a general level of medium resilient coping identified among the study participants, the gaps in knowledge and coping skills against adverse events presented above also highlight the need for strategies that could improve AA nursing staff's abilities of resilient coping to achieve desired outcomes.

4.1.3 Medical supply

Majority of respondents in the study indicated that they had sufficient supply of PPE at their workplaces. However, restraints on supplies and resource which were essential for fighting against the pandemic could limit the ability of the healthcare system to effectively manage the pandemic and to recover in a timely fashion. Shortage of medical supplies also threatened quality of care, affected nurses' stress levels and turnover [22]. PPE such as masks, gown, ventilation products, surgical apparel, and testing supplies were commonly found in the list of the shortage in supply (U.S. Food and Drug Administration [23].

4.2 Relative Risk

The pandemic impacted all walks of life globally, and uncertainty around the coronavirus and associated solutions still remain more than one year after its outbreak. Embracing an essential role in the pandemic management, AA nursing staff's concerns about the disease and its consequences were specifically indicated in the current study with participants generally expressing fear and concerns about the pandemic and infection risks. Moreover, discrimination experience at work and/or outside of work added to their risks for health problems. Pandemic concerns specifically related to anti-Asian discrimination among the AA community were reported to be greater than other pandemic concerns [24]. Race and ethnicity were primarily identified as the suspected reasons for discrimination experience in our participants. Our results were similar to studies that assessed the perceived impact of COVID-19 related stigma and discrimination in the minority populations. Tied to anti-Asian sentiments across the world, the prevalence of discriminatory incidents among individuals of East Asian and South Asian

background were high and the experience was associated with poorer mental health [25,26,27]. Exposure to the above risk factors while without adequate support and resources to boost AA nursing staff's confidence and abilities to cope effectively and successfully makes them more vulnerable to negative health outcomes.

4.3 Health Status (QoL)

As shown in the Vulnerable Populations conceptual framework, we found that AA nursing staff's overall health, measured by QoL, was significantly associated with availability of resources and their relative risk such as discrimination. Evidence [28,29] suggested that minority individuals who perceived and/or experienced discrimination were more likely to have worse mental and physical health. Furthermore, negative health impact was also linked with witnessing discrimination or hearing about prejudicial/ discrimination incidents. Limited preventive measures could heighten healthcare providers' fear of infection, perceptions of vulnerability to the pandemic, and worsen their psychological health [30,31]. Despite no critical shortage of PPE was identified by our participants at the time of the study, the findings revealed the prevalence of fear of COVID-19 and perceived risk for infection among the participants. Facing the dual threats associated with this pandemic, considerations of other factors beyond wearable protection that could possibly play a critical role in AA nursing staff's health and wellbeing are warranted.

Similar to our findings of the beneficial contribution of resilience coping and social support to optimal QoL, Leners and colleagues [32] highlighted that resilience could possibly prevent compassion fatigue and reduce burnout among healthcare professionals in times of crisis. Meanwhile, having strong organizational or support resources extended by family, friends or peers alleviates healthcare providers' emotional distress while enhancing self-efficacy, thereby strengthens job confidence and coping skills to overcome adversity that jeopardized their QoL [16,33]. Supervisory leadership is of great importance for nurturing a safe, trusting, and healthy work environment in which nurses would be more likely to be empowered through challenges and vulnerability [34,35]. However, few of our participants mentioned support from supervisors when they experienced racism from patients, and/or other caregivers or their own colleagues.

4.4 Implications

Intensified pressure arising from the double pandemic affected every aspect of AA nursing staff's health and their work, the prolonged physical and emotional stress induced may also affect patient experience and health outcomes [36,37,38]. Mitigating relative risk (e.g., both potential infection risks and discrimination) and enhancing resource availability (e.g., social support and resilience coping) could promote AA nursing staff's QoL. Thus, raising public awareness and educating about racial bias, establishing systematic approaches such as organizational policies that may combat discrimination against AA nursing staff are crucial for building an overall healthy and inclusive community. Additionally, providing resilience training for AA nursing staff will improve their self-efficacy in strengthening resiliency and abilities to minimize the impact of adverse experiences, thus increased health behaviors and their QoL [39].

4.5 Limitations and Future Research

There were several limitations to the study. Our sample was a convenience sample with relatively small sample size. Qualitative responses to the open-ended survey questions were also limited. The access to this online survey might also be limited to nurse organizations and associations that promoted its distribution. Despite these limitations, the anonymous nature of the online study may minimize the self-report bias.

Future research may strive for a larger, more comprehensive sample in each of the AA ethnic subgroups to allow meaningful comparisons across different AA ethnic groups. Longitudinal research exploring changes over time and additional factors influencing AA nursing staff's health and wellbeing is also warranted.

5. CONCLUSION

To our knowledge, this is the first study to investigate Asian American nursing staff's QoL and related factors since COVID-19 pandemic occurred. Considerable AA nursing staff witnessed and/or experienced racial/ethnic related discrimination at their personal and professional life that has made profound negative impact on their QoL. Understanding protective and risk factors for AA nursing staff's QoL has great value for promoting health equity among

them and quality of patient care. Ongoing efforts to address discrimination issues at system and structural levels and to allocate timely resources for AA nursing staff are essential.

CONSENT

All authors declare that written informed consent was obtained from the participants for presenting the research findings to scientific journals and conferences. A copy of the written consent is available for review by the Editorial office/ Chief Editor/Editorial Board members of this journal.

ETHICAL APPROVAL

The ethical permission was obtained from Arizona State University's Institutional Review Board. All authors hereby declare that all experiments have been examined and approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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