

SOURCES OF STRESS AMONG MIDWEST AMERICAN INDIAN ADULTS WITH TYPE 2 DIABETES

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Abstract: Despite alarming health disparities among American Indians (AIs) and acknowledgement that stressors negatively influence health, conceptualization of the full spectrum of stressors that impact Indigenous communities is underdeveloped. To address this gap, we analyze focus group transcripts of AI adults with type 2 diabetes from five tribal communities and classify stressors using an inductive/deductive analytical approach. A Continuum of American Indian Stressor Model was constructed from categorization of nineteen stressor categories within four domains. We further identified poverty, genocide, and colonization as fundamental causes of contemporary stress and health outcomes for AIs and conclude that stressors are generally experienced as chronic, regardless of the duration of the stressor. This work on AI-specific stressors informs future health research on the stress burden in AI communities and identifies target points for intervention and health promotion.

INTRODUCTION

Stress process models of health (Pearlin, 1989; Pearlin, Menaghan, Lieberman, & Mullan, 1981) describe the relationship between stressor exposures and health consequences (Cohen, Kessler, & Gordon, 1997; Turner, Wheaton, & Lloyd, 1995; Wheaton, 1994; Wheaton et al., 2013). While linkages between stress and health are widely documented, conceptualization of the “universe of stress” (i.e., the full spectrum of stressors a population might experience; Wheaton, 1994) for people of color, and Indigenous people in particular, remain understudied (Turner & Avison, 2003; Walls & Whitbeck, 2011). Proper conceptualization of stressor exposure is a critical component for further research on estimating the contribution of stressor exposure on health outcomes (Turner, 2013). This qualitative exploratory study builds upon the strong foundation of theoretical and empirical evidence from Indigenous and sociological scholars to systematically map a vast array of social stressors identified by a sample of American Indians (AIs) living with a chronic disease: type 2 diabetes (T2D). Our efforts are one important step toward identifying the AI stress universe and, more distally, addressing longstanding health challenges in Indian Country.

Background

AIs experience higher rates of health challenges compared to other racial and ethnic populations in the United States (Centers for Disease Control and Prevention, 2012; Shiels et al., 2017). Examples include obesity (Ness, Barradas, Irving, & Manning, 2012), asthma, smoking, psychological distress (Blackwell, Lucas, & Clarke, 2014), suicide (Curtin, Warner, & Hedegaard, 2016; Shiels et al., 2017), and T2D, a disease that AIs are three times more likely to die from than are whites (Indian Health Service, 2015). Stress has enduring effects that contribute to these health outcomes (Anda et al., 1999; Jiang, Beals, Whitesell, Roubideaux, & Manson, 2008; Klinnert, Mrazek, & Mrazek, 1994; McFarlane, 2010; Mullany et al., 2009; Remigio-Baker, Hayes, & Reyes-Salvail, 2015; Tobin et al., 2016; Walls, Hautala, & Hurley, 2014). In fact, stress has been implicated in the onset of T2D for hundreds of years (Surwit, Schneider, & Feinglos, 1992; Willis, 1679) and is associated with depressive symptoms (Walls et al., 2017), reduced self-care behaviors (Walders-Abramson et al., 2014; Walls et al., 2017), and quality of life indicators (Hilliard et al., 2016; Walls et al., 2017) for those living with T2D.

Stress process scholars recognize that people of color and those from lower socioeconomic backgrounds, including Indigenous people, are differentially exposed to stressors that increase risk for poor health status and mortality (Phelan, Link, Diez-Roux, Kawachi, & Levin, 2004; Turner, 2010; Turner et al., 1995; Wheaton et al., 2013; Williams, Neighbors, & Jackson, 2003). For example, studies demonstrate that perceived racial discrimination is associated with elevated blood pressure (Davis, Liu, Quarells, & Din-Dzietham, 2005; Williams & Neighbors, 2001), psychological distress and depressive symptoms (Kessler, Mickelson, & Williams, 1999; Ong, Fuller-Rowell, & Burrow, 2009), and anxiety symptoms (Hwang & Goto, 2008; Ong et al., 2009). For marginalized populations, discrimination and other stressors tends to occur in a contemporaneous and cumulative manner, compounding the effects of stress process activation, and leading to negative health consequences not experienced by those with economic and social advantage (Pearlin, 1989; Pearlin et al., 1981; Turner et al., 1995; Walls & Whitbeck, 2012).

Indigenous scholars and allies also highlight the key role stress plays in the etiology and perpetuation of AI health disparities and provide a substantial theoretical basis for continuing to study the impact of stressors on AI health (Walls & Whitbeck, 2012; Walters & Simoni, 2002). The cornerstone of these approaches is the concept of historical trauma. Successive sociopolitical and genocidal acts disrupted the cohesion of AI families, communities, and government systems (Brave Heart, 1998; Duran & Duran, 1995; Evans-Campbell, 2008; Gone, 2009; Gracey & King,

2009; Gonzales et al., 2018; Graham, 2008; Sarche, Tafoya, Croy, & Hill, 2017; Whitbeck, Hoyt, McMorris, Chen, & Stubben, 2001; Whitbeck, Adams, Hoyt, & Chen, 2004; Wilkins & Stark, 2011). Cumulative effects related to colonial terrorism went unresolved and traversed generations, resulting in complex, unresolved grief and loss, survivor guilt, psychic numbing, fear, anger, and other symptoms (Balestrery, 2016; Gonzales et al., 2018; Kading et al., 2015; Whitbeck, Chen, Hoyt, & Adams, 2004; Brave Heart, 1999), also summarized as a “soul wound” (Duran & Duran, 1995). These outcomes continue to amalgamate with direct, contemporary stressors (e.g., microaggressions, lateral oppression), resulting in behavioral and physical health sequelae (Balestrery, 2016; Brave Heart, 2000; Brave Heart, Chase, Elkins, & Altschul, 2011; Brockie, Heinzelmann, & Gill, 2013; Burnette & Figley, 2017; Gonzales et al., 2018; Brave Heart, 1999). Indigenous scholars and allies uphold that a historical trauma and oppression perspective is an essential aspect in forming the methodological framework for the empirical study of AI health challenges and well-being (Burnette & Figley, 2017; Kading et al., 2015; LaFromboise, Medoff, Lee, & Harris, 2007; Walters & Simoni, 2002).

Empirical research has reported on historical and contemporary stressor exposures as critical contributors to AI health outcomes, disparities, and access to care. A set of historical trauma research about boarding schools illustrates that an era of historically traumatic events paved risk pathways toward poor behavioral health outcomes for Indigenous people of the Americas (McQuaid et al., 2017; Walls & Whitbeck, 2012). Another distinctive set of studies demonstrated that thoughts of historical cultural losses are linked to distress (Whitbeck, Adams, Hoyt, & Chen, 2004; Whitbeck, Walls, Johnson, Morrisseau, & McDougall, 2009). Other health outcomes stem from historical trauma by way of contemporary stressors. Assessment of the literature on contemporary stressor exposures and health outcomes includes perceived discrimination, interpersonal and other traumas, and childhood stressors. Substance abuse (Whitbeck, Hoyt, McMorris, Chen, & Stubben, 2001), depressive symptoms (Walls, Gonzalez, Gladney, & Onello, 2015; Whitbeck, McMorris, Hoyt, Stubben, & LaFromboise, 2002), diabetes-related distress (Sittner, Greenfield, & Walls, 2018), uncontrolled blood glucose (Gonzales, Lambert, Fu, Jacob, & Harding, 2014), and physical pain and impairment (Chae & Walters, 2009) are associated with perceived discrimination. In regard to access to care, perceived discrimination and lateral oppression have been identified as barriers to health care for Indigenous people (Balestrery, 2016; Gonzales et al., 2017; Willie, 2017). Research on interpersonal and other traumas among AIs, help explain disproportionate rates of post-traumatic stress disorder (Beals et al., 2013), cardiovascular

disease, chronic pain, depressive symptoms (Tehee et al., 2017), as well as differences in blood glucose levels (Goins, Noonan, Gonzales, Winchester, & Bradley, 2017) and treatment modality among AIs with T2D (Jacob et al., 2013). Studies also conclude that stressor exposures during childhood and adolescence increase risk for T2D (Jiang et al., 2008), problematic substance use (Boyd-Ball, Dishion, Myers, & Light, 2011; Brockie et al., 2015; Koss et al., 2003; Whitesell et al., 2009), and impact additional aspects of AI health (Baldwin, Brown, Wayment, Nez, & Brelsford, 2011; Brockie, Elm, & Walls, 2018; Kenney & Singh, 2016; Warne et al., 2017). This important body of work sheds light on historical, discriminatory, traumatic, and early life stressors as determinants of poor health and health care access.

Although scholars from multiple disciplines acknowledge the relationship between stress and health, we are unaware of any empirically-derived conceptualizations of an AI stress universe. Engaging in an expansive conceptualization process of possible stressors that AIs experience can help researchers operationalize a full range of stressors for studies on stress and health. This can lead to more valid conclusions about the impact of stress on AI health. Therefore, we propose that the identification of the AI stress universe is critical for demonstrating the collective impact of stress on AI health and for delineating whether certain types of stressors or combinations of stressors differentially impact health. In this study, we comprehensively and systematically map a range of AI-identified stressors using an organizational framework informed by Indigenous knowledge and sociological theory.

METHODOLOGICAL APPROACH AND METHODS

Our methodological approach considered concepts and theories related to stress processes, the stress universe, and historical trauma in conjunction with the need to capture and arrange a landscape of stressors from five focus group transcripts. This steered us toward Wheaton's (1994) stress continuum framework, a tool developed based on definitions and phenomenologies of *stressors* which systematically classifies a range of stressors into domains that range from chronic to discrete (Wheaton 1994, 1999; Wheaton et al., 2013).

Study Design

This study utilized focus group data from a community-based participatory research project, Maawaji' idi-oog mino-ayaawin (Gathering for Health). A central aim of Gathering for

Health is to advance measurement of stress processes among AI adults. Five tribal communities in Minnesota and Wisconsin collaborated with researchers at the University of Minnesota to plan and implement the sequential exploratory mixed methods study that began in 2013. The first phase of data collection involved focus groups to inform selection and development of the quantitative survey phase (Creswell, 2010; Creswell, Klassen, Plano, & Smith, 2011). Focus groups were chosen to generate maximum data resulting from interactions between participants (Krueger & Casey, 2009). Two individuals from each community were trained as focus group moderators and followed a questioning route about sources of stress, T2D management, and coping strategies. All focus groups were audio-recorded and transcribed verbatim. Sessions were 99-130 minutes in length with 7-10 participants (24 women, 18 men, $N = 42$). Purposive sampling was used to recruit self-identified AIs over age 18 with T2D. Attendees provided written consent and received \$30 with a meal for participation. The institutional review board at University of Minnesota and the Indian Health Service National Institutional Review Board approved the study protocol.

Analytic Strategy

We created an *a priori*, theory-informed coding template (Crabtree & Miller, 1999; Miles & Huberman, 1994) that included broad domains of stressors (e.g., discrete events, chronic challenges), similar to Wheaton's stress continuum model (Wheaton, 1994), and historically traumatic events (Brave Heart, 1998). After constructing the coding guide, transcripts were uploaded to Dedoose software (version 6.2.7) for data management and analysis. Next, an initial reading of all transcripts helped authors understand the broad landscape of stressors represented in the data. We then folded in an inductive/deductive approach to coding (Fereday & Muir-Cochrane, 2006) that allowed us to conduct several waves of "semi-open" coding in conjunction with deductive coding to document general themes. Keeping sociologic typologies of stress and Indigenous frameworks of historical trauma in mind, we focus-coded the identified themes. This included continuous comparison of codes with iterative collapsing and expanding themes (Charmaz, 2014). To facilitate our reaching of a categorization end point, we chose to highlight focal stressors that participants emphasized in their response.

RESULTS

We present thematic findings along a stressor continuum from chronic to discrete while acknowledging that stressor categories are not mutually exclusive and themes and sub-themes can be classified across domains and categories (e.g., lateral oppression, health management). Displayed in Table 1 are four broad domains of stressors (i.e., chronic stressors, non-events, daily hassles and battles, and life events) and nineteen corresponding themes extrapolated from the data. Additionally, two fundamental causes of stressors are shown: 1) genocide and colonization and 2) poverty. Because our sample focuses on AI adults living with a chronic disease, we denote themes (*) in which participants explicitly refer to health-management stress as their focal stressor or when participants shared that the focal stressor occurred in the context of managing chronic illness (including T2D and other chronic conditions).

Table 1
Continuum of AI Stressors Model: Fundamental Causes and Typology of Stressors

Chronic	Non-Events (absence or anticipation of)	Daily Hassles/ Battles	Life Events
Financial*	Retirement	Built Environment	Discrimination*
Health Management*	Social Support*	Health Management*	Medical*
Social Roles	Cultural Engagement	Discrimination	Work*
Job Features	Family Struggles		Death
Lateral Oppression	Health Status/Events*		
	Police		
	Crime		
----- Poverty -----			
----- Genocide and Colonization -----			

* denotes themes in which participants explicitly refer to health-management stress as their focal stressor or when participants shared that the focal stressor occurred in the context of managing a chronic illness

Chronic Stressors

Chronic stressors represent an array of enduring challenges and conditions (Pearlin, 1989; Wheaton, 1999) that are characterized by gradual onset, lack of clarity about how or when the problem developed, and lengthy course from start to resolution (Wheaton, 1999). Five chronic stressor themes were abstracted from the data. First, *financial* stressors are those related to ongoing economic hardship. The experience of financial strain varies tremendously by way of context (e.g., number of dependents, access to in-kind goods and services; Kahn & Pearlin, 2006). In relation to

financial stress, participant narratives contained sub-themes about *housing overcrowding* and struggles related to *accessing material goods and basic needs* like food and heating. One participant revealed the magnitude of some living situations as, “A lot of people [live in one house] . . . like 2-3 families . . . 11 people.” Another explained that “I’m always late on my electric bill . . . that stresses me ‘cause they come knocking on my door [telling me] what I owe, plus one hundred dollars.” Overlapping with the next category of chronic stressors, financial stressors related to participants managing health. One female noted, “It’s actually more expensive to eat healthy than it is to eat bad.”

Second, participants cited *health management* as an ongoing challenge. One man shared, “So I had to deal with this diabetes, this damn diabetes that I hate every day.” Another person poignantly illustrated the ramifications of managing their chronic disease: “I had to quit my job because of my health . . . and now I just hang out going to doctor appointment after doctor appointment, trying to stay alive.”

A third theme among chronic stressors was related to *social roles* (e.g., parent, spouse). Role-related stressors have salience because they are often tied to longstanding connections to identity and demand transitions into and between roles (Pearlin et al., 1981; Pearlin, 1983; Thoits, 1991; Wheaton, 1990). We heard narratives of *child- and elder-caretaking* activities as significant stressors for many, especially women. A grandmother stated, “I’m taking care of my grandchildren while their dad is incarcerated.” In this case, caretaking stress was layered with stress related to *lack of transformation into a later life normative role* (Wheaton & Gotlib, 1997). Another woman expressed pressure she felt from *community demands*: “People always need you. . . So many people that want you to be there and you’re trying to be there and here and do this and [that].” Chronic internal conflict about one’s social role was evident in the data. In the following excerpt, a *family member’s ongoing excessive alcohol use* resulted in a participant’s conflict about if they should care for their relative or not: “[Seeing] somebody get up in the middle of the night, at three o’clock in the morning and start [drinking], and then at one o’clock in the afternoon, [they are] passed out.”

The fourth chronic stressor theme was related to *job features*, a variation of a social role-related stressor. Participants shared a range of stress inducing experiences related to employment and workplace. High stakes *responsibility* in context of a supervisory role is one example:

I had terrible stress when I was working. I had a lot of personnel that worked with me, and I was a supervisor . . . If they were hurt in any way, it was my fault. If they were killed, it was my fault . . . I never slept very much.

Finally, *lateral oppression* was another chronic situation that participants discussed. Lateral oppression is a specific form of discrimination that occurs within social groups (Mays, 1985). For AIs, lateral oppression is a projection of one's internalized oppression brought on by imposed colonial attitudes and behaviors which leads to harmful acts toward someone from within one's own tribal community or other Native people (Balestrery, 2016; Burnette & Figley, 2017; Duran, Duran, Woodis, & Woodis, 2008; Harris, Tijerina, & Harris, 2017). One man spoke of lateral oppression in this way: "Our own people are keeping ourselves down. How are we supposed get anywhere or do anything when our own [tribal government] council. . . is keeping us down?"

Non-Events

Non-events are the second major domain of stressors which encompasses two large categories: *absence of normative life course events* or time periods (e.g., when a woman is unable to conceive) and *anticipatory stressors* (e.g., when one believes a major life or traumatic event is unavoidable; Wheaton, 1999) and seven sub-categories. Non-events are chronic in the sense that they generally produce ongoing worry or disappointment that unfolds and persists over a prolonged time. However, there is a tone of discreteness with non-events, as is the case when an anticipated event occurs (Wheaton, 1994).

Absence of Normative Life Course Events

We noticed that absence of normative events tended to generate a sense of despair or loss, and anticipation of an event yet to come typically resulted in a sense of uneasiness, anxiety, or hopelessness. Focus group participants discussed doubt that they would reach *retirement* from work and expected that post-retirement life will be short. One man asked, "Who the hell lives to 65 to get their retirement?" and another male responded, "Exactly." A female chimed in, "[Yeah,] who? And if you do [retire], you're dead within like two years of it."

Lack of *social support* was a common phenomenon discussed by participants; sometimes in context of *diabetes management*. One woman explained how lack of family understanding about her disease brought on disappointment and frustration:

I get a lot of guilt trips thrown on me by my family and friends. Like a lot. And I'm like, "Well I . . . need to take care of myself." . . . They don't understand diabetes and the mental health of everything . . . I even sat down with all my friends to show them the insulin. . . They still don't get it. . . They're just like, "Oh, whatever," like "just throwing another pity party." And it's like, "No, this is real shit I'm trying to tell you."

The absence of Indigenous *cultural engagement* was another non-event stressor in the data. One grandparent shared that her granddaughter was not embracing traditional ways:

[I'm] trying to teach my granddaughter what I know that my grandma taught me. And she wanted me to make a [pouch] for her little boy's belly button, and she said, "Can you make it for me?" I told her, "You have to learn to make it yourself, so you can show your kids and your grandkids. I'm not going to live forever. . . . You have to learn . . . so you can pass it down." . . . She gets upset sometimes because she just wants me to do it for her . . . She is trying to battle with our ways.

Anticipatory Stressors

Worry about *family struggles* was a common sub-theme within the category of anticipatory stressors. Uncertainties about loved ones' well-being, possibilities of encountering *gangs* and *drugs*, and general ambiguity about the future and *environment* were expressed by participants. A woman spoke of her concern for the welfare of her children and grandchildren: "I worry about their jobs – are they going to have enough money to support this baby? They're living in a house, everything's gotta be paid for. Things are harder now than when I was younger."

Anticipation about worsening *health status and medical events* were frequently brought up during focus groups sessions. One participant illustrated progressing kidney failure and anticipation of possible *dialysis*, "I always worry that if I don't take care of myself I'm going to be like [my sister] 'cause she suffers a lot going to dialysis." Others shared fear of *hereditary risk* of disease: "I hope to God that [my son] don't have the problems that I have. I have severe heart problems now . . . I just pray every night for my son and my family that he doesn't get that." *Perceptions of health care quality* also lead to anticipation of adverse health events. For instance, one person stated, "I'm gonna be having my jaw snapped because we have a shabby dentist, turning my teeth into Swiss cheese."

Police were not always seen as protectors and sometimes evoked irritation or anxiety among participants, thus serving as another anticipatory stressor. One man stated, “Cops are stressors. You can’t even drive around anywhere from ten o’clock to six in the morning without having to worry about them cops.” A woman shared her perception of *inequitable police power*: “Just knowing too that [the police] got the power, [and] they can pin anything on you.” Some might argue that policing-related stressors correspond with daily battles or ambient stressors (Aneshensel & Sucoff, 1996) because of regularity and a community-wide looming sense of a future police-related event. We did not disregard these alternatives, but placed police-related stressors within the anticipation category because participants more often spoke of what might happen because of police presence.

Tribal members shared fears of *crime*. Similar to policing, respondents sometimes mentioned anticipation of criminal activity in the context of telling a traumatic story (e.g., *victimization*), foreseeing *community-level substance abuse*, or *endemic economic problems*. The following correspondence took place between two focus group members.

Male: You almost know that the economy is gonna cause these kids to break and enter for money, for drugs.

Female: The breaking and entering.

Male: At all hours of the night, even when you’re in the house.

[two others agree with a mmmmm]

Male: . . . You could hear bullets going through the air all hours of the night, around the house. Even hittin’ the house sometimes.

Daily Hassles and Battles

Daily hassles and battles are another domain of stressors that like non-events, have discrete and chronic stressor features. The sociology literature discusses daily hassles (e.g., daily or near daily activities such as those occurring during the workweek) as regular microevents or routine brief encounters with distinct starting and ending points (Wheaton, 1994). Daily hassles reflect social realities (Wheaton, 1994) and require minor behavioral adjustments (Thoits, 1995). We classified stressors into an adjusted domain, *daily hassles and battles*, rather than *daily hassles*. This contrast with the general health sociology literature represents our findings that some stressors are regular in frequency and duration, similar to daily hassles, yet they are substantial in their

enduring effects beyond being simply a “hassle.” Within the daily hassles and battles domain we identified three categories of stressors. The first is related to structural irritants emerging from the *built environment*. Ruts, potholes, and unplowed roads impeded safe driving and serve as a daily nuisance. One man spoke of his driving experiences:

I drive a [school] bus and the bus will hit those ruts in the road . . . that bus does not fit those ruts. . . Maybe if they widened the [roads] – cut some trees and get more sunlight [to hit the pavement]? ‘Cause whenever I leave the reservation, fifty or more percent of the time, the roads are better.

In addition, participants talked about regular microevents related to chronic disease or *health management*. *Diet, exercise, and health care utilization* were common sub-themes within this category. One participant lamented, “So yeah, it’s the whole food part is a stressor because you gotta count the calories and the sugars and all that. I don’t have time for it, but now I gotta make time for it. In another example, participants discussed family members accusing them of “eating like a bird.” Paradoxically, at other times, “the family tells you, ‘Well eat right!’”.

Participants also shared experiences and perceptions of regular, expected *discrimination* from non-Natives and other AI people. We highlight two types of discrimination in the form of daily battles. This quote by a woman about her physician is a distinct instance of lateral oppression that occurred in the health clinic setting. (See also the Chronic Stressors section for discussion about lateral oppression.)

I hear a lot about [my doctor]. She’s Native American. We all know that. . . . I swear she treats us different than she treats the non-Natives. Like, health-wise. . . I think the non-Natives get more help than we do, and it’s a stressor because I see it every day.

Microaggressions are a sub-category of discrimination and include non-verbal representations of inferiority on the basis of race or other social statuses, subtle, covert forms of discrimination, and unintentional insults, that can be rooted in unconscious bias (Pierce, 1974; Solórzano, Ceja, & Yosso, 2000; Sittner et al., 2018; Sue, 2010; Walls et al., 2015). Microaggressions are not micro in a sense that they cause little harm; in fact, microaggressions accumulate and may have greater health impact compared to more seemingly harmful acts of

discrimination (Lee & Turney, 2012; Pierce, 1995). We categorize microaggressions as daily battles because they represent “everyday” *brief* interactions (Sue, 2010). Presented are two microaggression stories.

They had a job opening for a teacher so [I went there] and I told that guy, I said, “Oh, what are you looking for, I want to fill out an application.” He said, “You can’t, the janitor’s jobs been taken,” he told me. My late husband just got mad and he says, “Tell him that you have five degrees and ‘why should I be mopping floors when I have five degrees in education?’” . . . Just because I’m brown doesn’t mean that’s all I know is how to clean. [group laughs]

I got stressed out the other night watchin’ the [base] ball game [on tv]. Atlanta Braves. I hate that . . . (mimics “Indian” chants). . . [I said,] “Oh my god. Turn that off.” It was the Milwaukee Braves [when] I was a kid. They used to [ask] me, they said, “Your dad is Chief Noc-a-homa?” That was [the mascot’s] name, Chief Noc-a-homa, he’s the one with the drum.

Life Events

Perhaps the most widely used approach to stress process research focuses on stressful life events (Paradies, 2006; Wheaton, 1994). Life events may be sudden and unanticipated, or involve anticipation, but the duration is short compared to the other domains of stressors (Crowley, Hayslip, & Hobdy, 2003). Participants’ discussions surrounding these life events were frequently coupled with sense of loss. Typical life event themes included discriminatory life events, medical events, job events, and deaths of loved ones. Instances of life event *discrimination* were discussed as unexpected, and mostly traumatic. In this case, we heard about an event in the late 1970s when AIs were asserting their treaty rights and often encountered resistance.

I was law-enforcement back when treaties first started. You know, we upheld our gathering, hunting, and fishing rights. I was out on the lakes when they were shooting at us and throwing rocks at us and threatening my family. That was stressful. Especially when it comes to “I know where you live.” Even my wife got a couple threatening calls. I had to change our phone number. They said they were

coming after my kids. And then you go around the [lake area], you see the signs “Shoot an Indian, Save a deer.” “Spear an Indian, Save a walleye.”

Next, *medical* events (e.g., *disease diagnosis*, *medical emergencies*) were commonly discussed. One woman described finding out she was diabetic when she went to the intensive care unit (ICU).

I found out I was diabetic . . . I had to go to the ICU for three weeks . . . [The doctors and nurses] were like, “Man, you’re knocking on heaven’s doorstep.” And everything was collapsing, all my organs and my veins and my nerves because I was so dehydrated. . . . And I was really depressed when I found out [I had diabetes]. I was crying ‘cause I know the outcomes that. [pause] Your kidneys and losing limbs and stuff.

A woman explained how her *T2D diagnosis* paired with *memories of family suffering* had triggered a depressive-like state. “The first two weeks were very hard it was almost like a depression for me . . . Two weeks it took me to finally get out of it and tell people, ‘I’m diabetic’ . . . I have an uncle that lost both of his legs. I don’t want that to be me.”

Multiple participants shared experiences related to *work* events including job loss or change. Participants found themselves needing to retire at an earlier age than expected due to chronic illness. “They wanted me to [manage] my own [factory] plant. . . I didn’t take the job. I was too stressed out then. My sugar was high. I know that was the cause of why I was getting sick all the time there. So I retired early.” Another man spoke of losing the ability to climb at his construction job: “I wanted to work longer, but I just couldn’t climb anymore like I used to.”

The theme of dying or *death* of loved ones is our final example of life events. Family member deaths are primarily spoken in conjunction with varied levels of distress. One woman shared simply that her nephew “got shot by the cop.” Another woman told the story of her children’s reaction to the death of their great grandfather and how she is reminded of her son’s death.

I went up to my grandpa, and I could just feel his skin. And when he died, he had [multiple sclerosis], and he was so thin, and his skin was wrinkled. . . . But my kids, they’re the ones, when I woke up, I could hear [my son] crying, “I don’t want my

grandpa to die!” He was just panicked you know, and they had to take him out of the room. . . The only stress I have is the kids. [Them] having to go through that. I know how I felt when my son died, and I still feel it.

DISCUSSION

This study uniquely unpacks stress processes for Indigenous people, provides insight into targets for health promotion, and advances AI health research. We heeded the perspectives of AI adults who are managing a chronic illness and conclude that contemporary AI stressors generally function as chronic regardless of duration. We also categorized contemporary stressors to construct the Continuum of American Indian Stressors Model (Table 1) with four broad domains and nineteen stressor categories. This preliminary model reflects stressors that are generally scant in the literature, yet they are key to understanding the function of stressors on AI health and foundational to identifying the AI stress universe. In addition to addressing gaps in the AI stress-health literature specifically, this work moves the field of health equity research forward more generally by speaking to stressors that people of color face on a regular basis.

Adaptations of Stress Continuum Model

We started our analysis with an *a priori* coding template that was informed by Wheaton’s stress continuum model (1994). Wheaton relied on duration of a stressor and descriptions of internal phenomenologies (i.e., an individual’s emotional processes and cognitions as informed by cultural and contextual underpinnings) of stress to determine appropriate domains of stressors. We encountered significant challenges with classification of Gathering for Health data using Wheaton’s unadjusted model. For example, “daily hassles” is a type of stressor known for resulting in irritation or annoyance, is short from start to finish, and regular in its occurrence. When we tried to classify microaggression exposures, we found that they most closely matched with the daily hassles domain in terms of duration and frequency but not the remainder of the definition. Because of malalignment between Wheaton’s model and Gathering for Health data, we modified our classification approach to focus on “duration of stressor” as a driving factor for categorization, along with distillation of stressors to the “focal stressor” as our interest for this study. We also adjusted Wheaton’s daily hassle domain to daily hassles and battles (see Methods for additional description).

Experience of Chronic Stress

In contrast to most stress process literature, we found that participants perceived most stressors as ongoing chronic strains regardless of duration of primary stressor exposure. Stress proliferation, anticipation and rumination, frequent disruptive unresolved situations that cross-cut settings (e.g., workplace, home, community), and stressor domains contribute to this phenomenon. Stress proliferation is the tendency of stressors to multiply and cascade upon one another rather than emerge in isolation (Pearlin, Schieman, Fazio, & Meersman, 2005). Below is an excerpt demonstrating stress proliferation as well as rumination and anticipation.

I worked at the high school for 18 and a half years as a coach [for girls basketball programs]. Man, sometimes I would see some of the girls [and they would tell me], “I don’t want to go home,” or “I need to get out of there.” . . . [I wondered] am I going to have them, come Monday? Or then a few years back, . . . they had a suicide pact going on around here. I lost one of my players. . . . Some days you get that feeling, is this person going to show up Monday? [pause] They hear about a big party and all that . . . I say, “Oh geez. . . . Are my players going to be smart enough to say no?”

Although stressors might be conceptualized as discrete events on the surface, in the reality they are enveloped in contexts of prior and ongoing unresolved loss and grief as demonstrated in the above quote. Similarly, another participant stated, “Co-workers [don’t understand] what you’re going through and how it affects you. . . . And then when you try to explain yourself, they look at you like . . . they don’t believe you.” The following excerpt references unresolved conflict regarding Tribal Council actions and concerns about resource allocations.

With all the money they’re throwing around they should throw us in school and let us be the ones that run our own show here. But it’s not. It’s like that youth center stuff you know? Like, most of them jobs are gonna be for white people you know? Why don’t they send us to school? Or give us the chance to run it and do for our own people... Like, what can’t we do, but they can do . . . Why can’t our own tribe help us to run our own stuff?

Exposure to discrimination including microaggressions and lateral oppression, or “daily

battles,” often went unresolved contributing to the chronic stress experience. Inability or lack of opportunity to come to a resolution following a discriminatory event can result in a person’s diminished sense of self-worth and trigger thoughts of current and past oppression and subjugation, along with other residual effects. Another reason that participants generally interpret stressors as chronic is because there are unique forms of stressors that AIs experience, over and above those typically identified in the sociological literature. One example identified in the data is lack of Indigenous cultural engagement, another stressor that is difficult to resolve.

Fundamental Causes: Poverty, Genocide, Colonization

As evidenced in these data, *colonization*, *genocide*, and *poverty* act as fundamental causes (Link & Phelan, 1995) of contemporary stress and illness for Indigenous people. Poverty is a byproduct of colonization and genocide and began with land encroachment, loss of traditional foods, and the federal government’s encouragement toward dependence (e.g., Washington, 1779; Jackson, 1830; *Cherokee Nation v. State of Georgia*, 1831). In our data, lack of financial resources, basic needs (e.g., food, heating), employment opportunities, services, and community economic development are cross-cutting issues affecting individuals, families, and communities. The next excerpt is resonant of rapid social change which resulted from cultural genocide and attempts to change Indigenous worldviews and cultural ways of living (Graham, 2008). This is one example of the multigenerational layers of traumas and distal stressors that led to community-wide destruction and sense of loss.

Times changed. A lot of our people took to drinking. A lot of families broke up. A lot of kids went to far-off foster homes. In fact, my family broke up. People that I know. We had a thriving community at one time. I think there’s two families left down there now. I bet we used to have over 100 strong down there. That’s when everybody was close.¹

Fundamental causes were sometimes latent in the data; that is, the origins of stressors often were linked to poverty and its roots in colonization and genocide, even if not explicitly stated as such.

¹ This quote references federally sponsored assimilation efforts when children were being removed from families and adults were being provided incentives to move away from their homelands and into urban areas (e.g., Indian Relocation Act of 1956).

Historical Trauma

Conceptualization of colonization, genocide, and poverty as fundamental causes (Link & Phelan, 1995) is consistent in historical trauma scholarship. Historical trauma has been discussed as an etiological agent of behavioral and physical health challenges for current generations (Brave Heart, 1998; Elias et al., 2012; Evans-Campbell, 2008; Gone, 2009; Walls & Whitbeck, 2012; Walters et al., 2011; Whitesell, Beals, Crow, Mitchell, & Novins, 2012). Furthermore, the focus group participants' descriptions of stressors as generally chronic align with conceptualizations of historical trauma responses in the literature. For example, non-resolution, rapidly occurring traumas, and rumination have been described by Indigenous scholars (Brave Heart, 1999; Duran & Duran, 1995). In this work, we provide additional evidence that AI health research should consider historical and political occurrences as context and recognize that today's stressors are historically-anchored determinants of AI health (King, Smith, & Gracey, 2009).

Limitations and Future Work

We acknowledge limitations to this study. Participants were all living with T2D; as such, we identified several stressors that may be unique to those with a chronic disease. Diabetes provided the context for many stressors, including managing a chronic disease, changing behaviors, lack of social support, fear of disease complications, and the stress of having a poor health-related quality of life. These findings are particularly important given overwhelming evidence that stress is associated with T2D onset, complications, morbidity, and mortality (Fisher et al., 2008; Hamer, Stamatakis, Kivimäki, Kengne, & Batty, 2010; Roberts et al., 2015). Themes of stressors among this group are particular to those with chronic disease, which may or may not be different than the general AI population at large. However, the unfortunate reality is that pervasive chronic health challenges touch far too many AI lives and stressor themes likely approach generalizability. Another limitation is that focus group members discussed stressors that were disproportionately recent and non-traumatic, and thus, there may be certain types of stressors not represented in our analysis. This may have been due to their collective experience in the focus group and the vulnerability involved in expressing traumatic events with others or recall bias. Our findings could be triangulated with research about other forms of AIs stressors (e.g. childhood adversities) to create a more robust universe of AI stress.

We identified a broad landscape of stressors among a sample of AIs with T2D while

focusing on stressor duration and the focal stressor as reported by participants. Investigation of additional dimensions of the stress process such as magnitude are important in future research. Although we did not set out to assess the magnitude or emotional effect resulting from stressor exposures, some references to impact were mentioned in the findings section. For example, despair, loss, hopelessness, fear, irritation, frustration, anger, and distress were demonstrated within the excerpts. Future research should also take into consideration stressor context, the life course, multiple units of analysis (e.g., family, community), and interactions and constellations of stressors – paying close attention to those associated with race/ethnicity and class/poverty (Kawachi, Daniels, & Robinson, 2005; Mohatt, Thompson, Thai, & Tebes, 2014; Pearlin & Skaff, 1996; Walls & Whitbeck, 2011; Wheaton, 1994). Native people’s experiences with battling stressors such as microaggressions and lateral oppression are especially deserving of further inquiry, given the dearth of literature on these topics and the likelihood that these sub-categories of discrimination are widespread and high in magnitude. In fact, one woman from this study identified lateral oppression as the most significant stressor across her reservation. Given that most stressors in this study were experienced as chronic, future research should examine how Indigenous people resolve their problematic situations and reduce stress burden. One suggestion is to inquire about how Indigenous people come to terms with or identify “*their endings*” to problematic situations. This type of investigation would likely uncover that pathways toward health and well-being involve building resilience and strengthening access to resources; both of which are abundant in tribal communities.

CONCLUSION

Health disparities for AIs will be better understood and addressed when stress processes are thoroughly investigated. This qualitative study of AI adults with T2D bolsters prior historical trauma research by demonstrating how poverty, genocide, and colonization are fundamental causes of contemporary stressors and health outcomes. Our systematic categorization of stressors and launching of the preliminary AI stress universe concept contributes to understandings of stress process experiences for Indigenous people. We are hopeful that future scholarship builds upon these findings to further advance research on the role of stressors in Indigenous people’s health. Continued examination of AI-specific stressors as social determinants of health has the potential to substantively reduce health challenges within tribal communities and bring more attention to health disparities as health inequities.

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