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The relationship of five boarding school experiences and physical health status among Northern Plains Tribes

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Abstract

Purpose—American Indian (AI) boarding school attendance is related to poor physical health status; however, little is known about how specific aspects of this experience contribute to poor health. Five experiences (age of first attendance, limited family visits, forced church attendance, prohibition on practicing AI culture and traditions, and punishment for use of AI language) may be independently associated with physical health status in adulthood. We expected the effect to be greater for those who began boarding school at older ages.

Methods—Data on AI boarding school attenders ($n = 771$) came from the AI-Service Utilization, Psychiatric Epidemiology, Risk and Protective Factors Project. Multiple linear regression models examined the association of these five experiences with physical health status. Additionally, we conducted a separate set of regressions to test for an interaction effect of age of first attendance.

Results—Each of the five experiences noted above were independently associated with poorer physical health status compared to those who did not have these experiences. An interaction effect for those punished for use of AI language and who were aged 8 or older was confirmed.

Conclusions—Findings are consistent with reports that boarding school attendance is related to poor AI adult health. To inform AI health programs, the relationship of specific diseases and boarding school attendance should be considered.

Keywords

American Indian; Native American; Physical health status; Boarding school; Boarding school experiences; Residential school; American Indian health; Northern Plains

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Members of the AI-SUPERPFP Team are listed in Acknowledgements section.

Compliance with ethical standards

Conflict of interest Drs. Running Bear, Croy, Kaufman, Thayer, and Manson declare that they have no actual or potential conflicts that could inappropriately influence their contribution to this manuscript.

Research involving human rights This was a secondary analysis and was determined non-human subjects by the Colorado Multiple Institutional Review Board.

Informed consent This manuscript uses secondary data. Informed consent was obtained for the original data collection efforts.

Introduction

The American Indian (AI) Boarding School Era began in the late 1880s, and the purpose was to hasten the assimilation of AIs by altering their identities through instruction in the English language, Christianity, and Euro-centric cultural values, norms, styles of dress, and manner [1]. In 1891, education became compulsory for Northern Plains (NP) AI children aged 6–16 [2]. Two years later, parental non-compliance was penalized by the withdrawal of food, rations, and supplies for non-attending children aged 8–21 years [3]. Children were often forcibly removed from their homes [4].

The Meriam Report [5] detailed serious concerns with overcrowding, ventilation, heating, sanitary conditions, and safety in boarding school structures. In addition to environmental concerns, the report detailed concerns for the health and well-being of the children. Insufficient and unbalanced diets were reported, together with inadequate health care and lack of trained health care professionals. Diseases like tuberculosis, trachoma, influenza, measles, smallpox, and whooping cough spread rapidly resulting in death [6]. Corporal punishment was used to enforce rules with frequent reports of beating, imprisonment, and denial of food [7]. Physical, psychological, and sexual abuse in AI boarding schools is well documented [1, 6, 8]. Boarding school attendance is widely acknowledged as one of the major historical traumas that contribute to current-day AI health disparities [9].

Prior work demonstrates that boarding school attenders report poorer physical health status in adulthood than non-attenders [10–12]. This association, however, may vary by specific experiences of boarding school life. Young age of first attendance, lack of family visits, forced church attendance, prohibition to practice AI culture and traditions, and punishment for use of AI language are commonly described by attenders of boarding schools [1, 4, 6]. To date, however, the association of these specific experiences to physical health status in adulthood has not been rigorously and systematically assessed. Drawing upon a sample of NP AI attenders of boarding school, we sought to address this knowledge gap.

Methods

Our analysis employed the American Indian Service Utilization, Psychiatric Epidemiology, Risk and Protective Factors Project (AI-SUPERPFP) data collected from 1997 to 1999 that included NP AIs aged 15–57. Detailed descriptions of AI-SUPERPFP are reported elsewhere [13, 14]. NP participants ($n = 1638$) were randomly selected from tribal rolls with strata defined by age, sex, and residence on or within 20 miles of their reservations. AI-SUPERPFP received approval from the Colorado Multiple Institutional Review Board (COMIRB) and participating tribal governments. COMIRB determined that the present analyses were not human subject research and analyses were also approved by tribal governing bodies.

Our outcome variable was self-reported physical health status, measured by the Physical Component Summary Score (PCS) of the Short Form-36 [15–17]. PCS scores range from 0 to 100; higher scores indicate better physical health status. Scores were derived using established algorithms and were standardized to allow for meaningful comparison to other

studies [18]. Each boarding school experience was the primary independent variable in the five models: (1) aged 7 when attendance began; (2) time spent with family (rare or never); (3) forced church attendance; (4) prohibited to practice culture and traditions; and (5) punishment for use of AI language. Each variable was coded (0/1), where 1 indicated having experienced the condition. We dichotomized the age of first attendance at 7 and 8. Age 8 or older was used as a criterion to withhold food and rations from parents who were non-compliant with compulsory attendance [3]. Older children may have had a difficult time adjusting, and their life experiences were rooted in starkly different cultural and socialization environments [19]. Participant age at the time of the AI-SUPERPPF study was dichotomized (0–21, 1 = 22+). Individuals younger than 22 years who attended boarding school did so after tribes in the NPs began to manage boarding schools that supported and encouraged cultural connections, creating a different educational experience for younger individuals. All models were adjusted for age, sex, marital status, completion of a high school education or higher, unemployment, income below federal poverty level, and the number of diagnosed DSM-IV mental disorders.

Analysis

Counts and percentages for categorical variables, and means and standard deviations for continuous variables for the entire NP sample and boarding school non-attenders and attenders are reported. We used linear regression for the unadjusted and multiple linear regression for adjusted results of each boarding school experience and the physical health status score. To determine whether limited family visits, forced church attendance, prohibition to practice AI culture and traditions, and punishment for use of AI language varied by age of first attendance (7 or 8), we ran four additional models that included an interaction variable between the primary independent variable and age when boarding school attendance began. We calculated the interaction terms following recommended procedures [20]. For all analyses, we used weights to account for the differential probability of selection across the strata and for non-response [21]. Mplus was used for all analyses [22].

Results

These analyses use a sample of boarding school attenders ($n = 771$) from the total NP AI sample ($n = 1638$). Less than 2% of data were missing. Mplus uses full information maximum likelihood as a default for missing data allowing use to retain our full boarding school sample [22].

As shown in Table 1, 46% of the NP sample attended boarding school. Compared to the entire NP sample and non-attenders, boarding school attenders had the lowest mean physical health status scores ranging from 9.4 to 64.1 with a mean of 49.5 (SD = 10.3). Compared to non-attenders, fewer boarding school attenders were younger than 21. Women, those married, those with a 12th grade education or higher, those unemployed, and those living below the federal poverty level were more likely to have attended boarding school. Seventy-six percent of the boarding school attenders endured 1 or more of the five experiences, the average number experienced was 1.76 (SD = 1.53), and 8% endured all five experiences (not shown in tables).

Table 2 reports the unadjusted and adjusted coefficients, p values, and confidence intervals for the physical health status scores and each boarding school experience. The adjusted results for each of the five boarding school experiences and the physical health status score indicate that attenders who encountered these experiences had physical health score 1.87 to 2.34 points lower than attenders who did not have these experiences, with p values ranging from 0.03 to $< .001$. When exploring interactions between boarding school experiences and age of attendance, attenders punished for use of AI language and who were 8 or older when boarding school attendance began had a mean physical health status score of -5.75 ($p < .001$, $CI = -8.64, -2.86$) points lower than those not punished and who were 7 or younger. Interactions for the other primary independent variables and age of first attendance were not statistically significant (results not shown and not reported in tables).

Discussion

Our work contributes to a growing body of literature that demonstrates the detrimental impact that boarding school attendance has on AI health [6, 8, 10, 23, 24]. We expand upon this work by investigating the relationship of five commonly reported experiences to physical health status in adulthood. Prior work suggests that these five experiences negatively impact AI health [1, 4, 6]; however, this is the first rigorous systematic analysis of a large sample to empirically investigate, and ultimately support, prior work [1, 4, 6].

Our results indicate that attenders have high rates of high school education completion but also have the highest rates of unemployment and poverty compared to non-attenders and the entire NP sample. Those punished for the use of AI language and who were also 8 or older when attendance began reported the lowest health status scores. Similar age effects were not found for the other boarding school experiences. The critical age for learning language is up to 7 and 8, after which there is a steep decline [25]. Those removed from their homes at age 8 or older had a greater degree of AI language skill and proficiency and may have been more likely to speak their language leading to punishment.

Although the data did not include information on diet, health care access, and the extent of overcrowding and contagious diseases in boarding schools, these factors likely contribute to lower physical health status scores in adulthood. Our results align with theoretical work that proposes a more comprehensive framework for understanding current AI health disparities inclusive of boarding school attendance. To fully understand the current adult AI health disparities and health patterns, disease-specific conditions should be examined. Finally, given the wide range of experiences across tribal communities, further work inclusive of AIs across the US is necessary to validate these findings and assess the potential for regional variation.

Conclusion

AI adults who endured specific negative experiences during boarding school may be at risk for poorer physical health. Accounting for this early life experience may usefully inform clinical practice and health policy. Additional work identifying the relationship between

boarding school attendance and specific diseases and health conditions is needed to fully comprehend the impact of boarding school attendance on current AI health disparities.

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Table 1

Descriptive statistics for the Northern Plains sample and boarding school non-attenders and attenders

	Northern Plains sample (n = 1638)		Non-attenders of boarding school (n = 867)		Boarding school attenders (n = 771)	
	n/mean	%/SD	n/mean	%/SD	n/mean	%/SD
<i>Outcome variable</i>						
Physical health status score (PCS)	50.6	9.4	51.5	8.5	49.5	10.3
<i>Control variables</i>						
Age 21 years	318	16.3	186	21.5	79	10.3
Female	848	50.5	420	48.4	408	52.9
Married or cohabitating	827	51.3	434	50.1	409	53.0
12th grade education or higher	756	47.4	398	45.9	380	49.3
Unemployed	529	32.0	245	28.3	280	36.3
Income below federal poverty level	890	61.5	519	59.9	497	64.4
Past year count of DSM-IV disorders	0.3	0.7	0.3	0.7	0.4	0.7
<i>Primary independent variables (boarding school attenders)</i>						
7 Years old when began boarding school					541	33.3
Never or rarely visited family while attending boarding school					383	47.1
Forced to attend to church					307	36.7
Punished for using AI language					164	20.0
Prohibited to practice AI culture and traditions					257	64.1

Note: *n/mean* = number for categorical variables/mean for continuous variables, *%/SD* = percentage for categorical variables/standard deviation for continuous variables, *AI* = American Indian

Table 2

Unadjusted and adjusted results of physical health status and five boarding school experiences. Each row represents a separate regression model

	Unadjusted			Adjusted			Model-adjusted R		p value for R
	Coefficient	p value	95% CI	Coefficient	p value	95% CI			
<i>Control variables^a</i>	–	–	–	–	–	–	.055		.005
<i>Primary independent variables^b</i>									
7 years old when began boarding school	– 2.22	.012	– 3.96, – .48	– 1.87	.033	– 3.41, – .33	.061		.001
Limited family visits (rare/never)	– 2.41	.003	– 3.91, – .90	– 2.09	.006	– 3.59, – .59	.064		.001
Forced church attendance	– 2.48	.002	– 4.04, – .91	– 2.34	.003	– 3.88, – .81	.066		.002
Prohibited to practice AI culture and traditions	– 1.97	.017	– 3.58, – .35	– 1.96	.017	– 3.57, – .36	.063		.002
Punished for using AI language	– 3.87	< .001	– 5.59, – 1.83	– 3.55	< .001	– 5.51, – 1.59	.089		< .001

AI = American Indian

^a Adjusted R for model with control variables: age 21, female, married or cohabiting, 12th grade education or higher, unemployed, income below the federal poverty level, past year count of DSM-IV disorders

^b Physical health status score and the primary independent variable, adjusted for all control variables noted above