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**Relationship between Insurance Type & Medical History, PCP Frequency, and Education
level in the Punjabi Patient Population**

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Introduction:

A patient's insurance status has a great influence on their health outcomes and how they manage their conditions. Unfortunately, ethnic and racial minorities are less likely to be insured than their white counterparts; in fact, estimated numbers say minorities account for more than half of the uninsured population (Majerol et al., 2015). Patients without insurance are at higher risk for poor health outcomes. Previous studies show that there is a distinction between public and private insurance in relation to health outcomes. Individuals with public insurance do have access to the same facilities but are more likely to have worse health outcomes than those with private insurance (Lee et al., 2021). Moreover, patients without insurance or minimal coverage are less likely to regularly visit their primary-care physician. In one study, patients with some type of health insurance, such as private or public, are more likely to use routine care services compared to uninsured (Dugan, 2020). Lack of routine care can lead to poor health outcomes. Recent studies have shown that patients with less regular visits are more likely to have more ED visits, potentially more hospitalizations, resulting in higher costs (Rose et al, 2019).

In this study, we examine the relationship between insurance type and medical history, PCP frequency, and education level, specifically in the Punjabi population of the Greater Sacramento area. By doing so, we hope to contribute more scientific literature focusing on the Punjabi population, and propose solutions to community-specific health issues.

Methods:

The Bhagat Puran Singh Health Initiative (BPSHI) patient population was assessed using data collected by student volunteers at Mobile Clinics across the Greater Sacramento Area. The Mobile Clinics were located at Gurdwaras, a Punjabi temple. BPSHI student volunteers noted the

patient's demographics, and collected patient vitals. The categorical variables in our dataset are Insurance Type, Medical History, PCP Frequency, and Education level. The categories for Insurance Type are Employer-Based, Private Insurance, Medicare, Medical, No Insurance, Other, & Not completed. For Medical History, the categories are Hypertension, Hyperlipidemia, Hyperthyroidism, and Other. The categories for PCP Frequency are greater than or equal to once per month, greater than or equal to once per year, or less than once per year. The categories for Education Level are Below high school, High school, Bachelor's Degree, Professional/Graduate Degree, Other, and Not completed. The overall trends for each of the categorical variables were analyzed. Additionally, the relationships between insurance and the other categorical variables were also analyzed.

Results:

We analyzed general trends for four variables: age, insurance type, education level, PCP frequency, and medical history. Most BPSHI patients are in the middle-aged to geriatric population (Figure 1). Overall, in regards to insurance type, individuals primarily have "other" insurances and Medicare, with approximately 27% falling into "other" and 26% with Medicare (Figure 2). A high school degree is the most commonly attained level of education, with around 30% of participants falling into this category (Figure 3). The distribution of frequency of visits showed that 45% of patients visited primary care physicians greater than or equal to 1x per year (Figure 4). When examining medical history, one of the most common conditions amongst patients is hypertension, which affects 48% of participants. Hyperlipidemia and hyperthyroidism

are the next most prevalent conditions, with both having approximately the same incidence of 20% (Figure 5).

Analysis of frequency of visits by insurance type showed that those with no insurance have no instances of visiting their primary care physician greater than or equal to once per month (Figure 6). In terms of insurance and medical history, across all insurance types, hypertension was the most frequent condition. For those with employer-based and private insurance types, hyperlipidemia was the next most prevalent condition. For those with Medicare, Medical, and Other insurance types, diabetes and hyperlipidemia together were second most common (Figure 7). When analyzing the relationship between education level and insurance, there was a high prevalence of individuals with education levels below high school who had Medicare, Medical, no insurance, and “other” insurances (Figure 8).

Figure 1. BPSHI Patient Ages

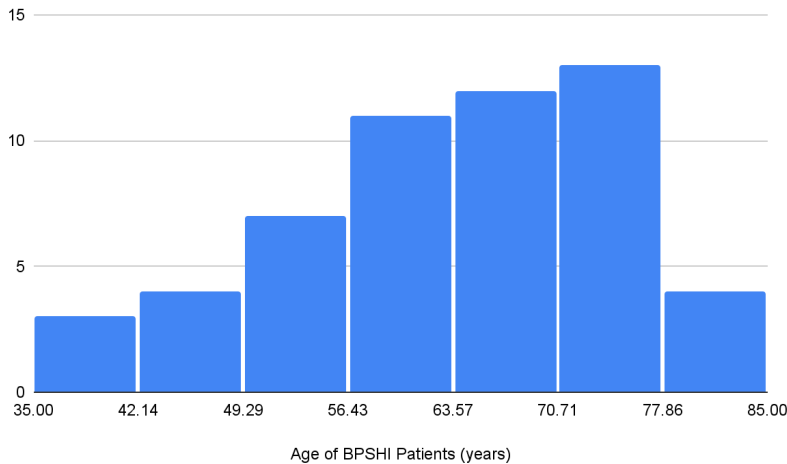


Figure 1 shows that BPSHI Patients are mostly elderly, with most being above 56 years old and below 78 years old (n = 111). The average age was 63 years old.

Figure 2. Primary Insurance Provider Types

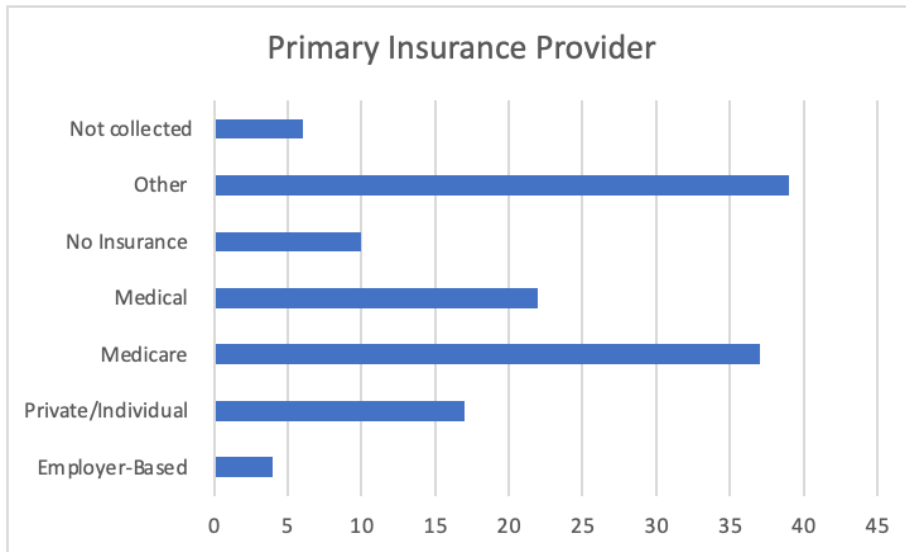


Figure 2 displays the number of individuals ($n = 135$) that have a certain type of insurance. Aside from “other” insurances, Medicare was the most common ($n = 37$, 26%).

Figure 3. Highest Education Level Attained

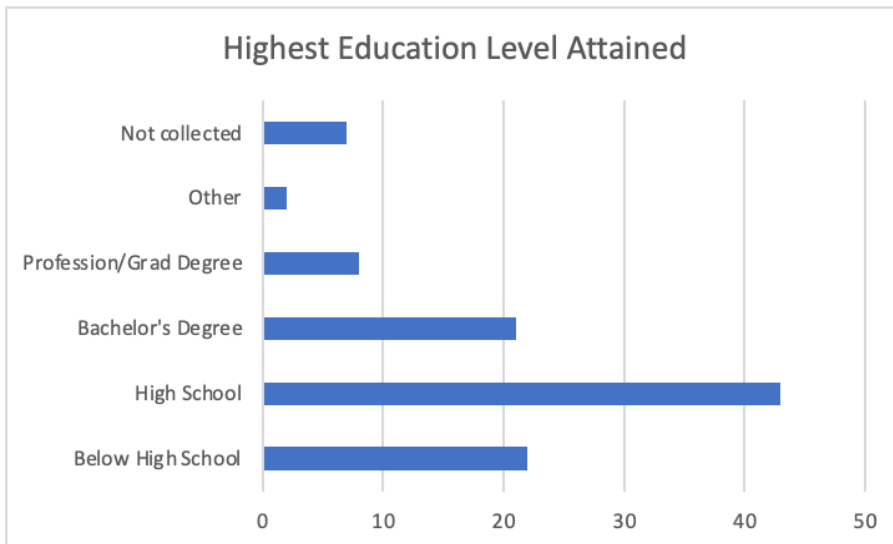


Figure 3 looks at the highest education level attained by patients ($n = 103$). High school is the most common highest attained level of education ($n = 43$, 30%).

Figure 4. Primary Care Provider (PCP) Visit Frequency

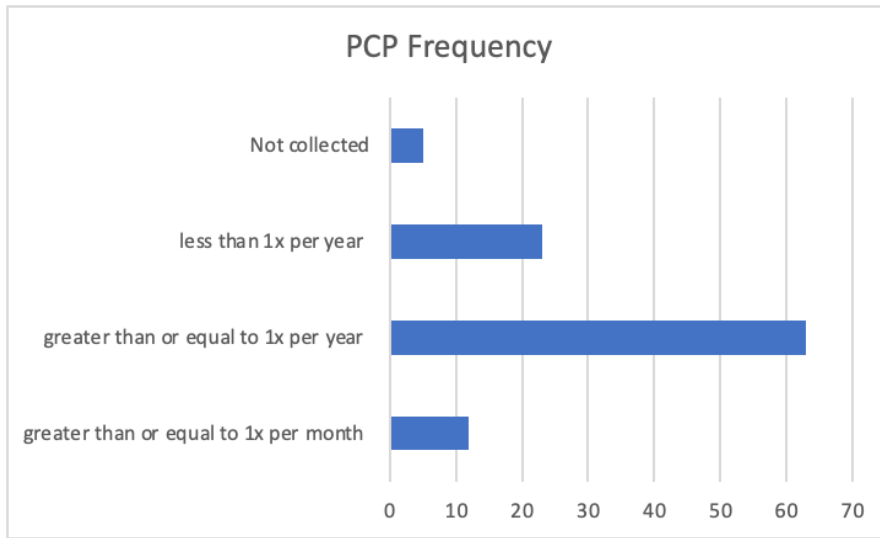


Figure 4 examines a patient's frequency of visits to a primary care provider (n=103). A majority of patients visited primary care physicians greater than or equal to 1x per year (n=63, 45%).

Figure 5. Medical History

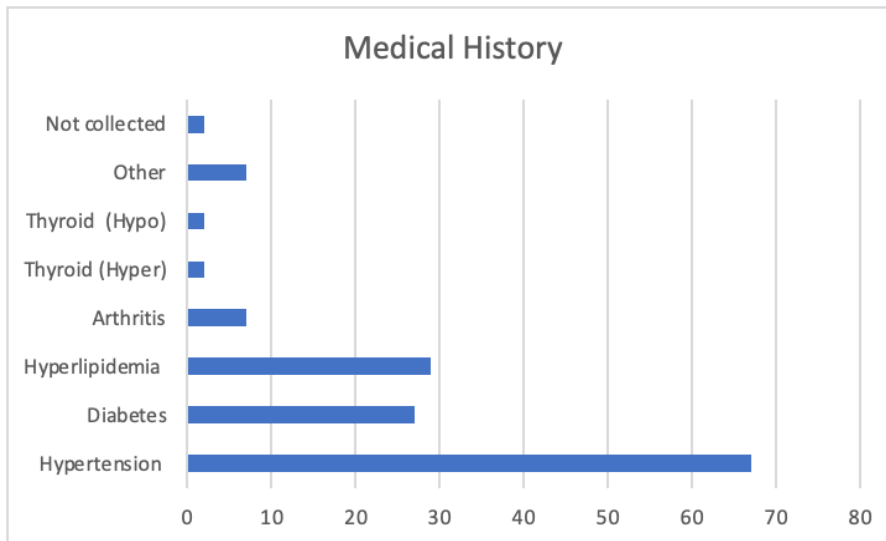


Figure 5 looks at the overall medical history of our patient population (n=143). The most common medical problems were hypertension, hyperlipidemia, and diabetes (n = 67, 29, 27 respectively) .

Figure 6. Frequency of Visits by Insurance

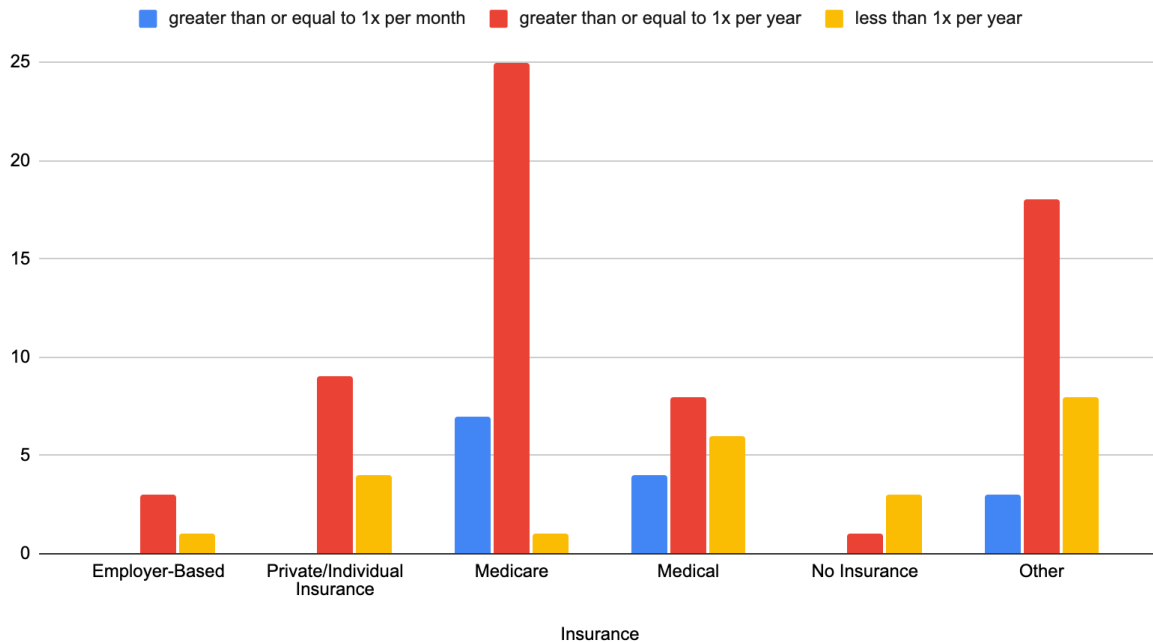


Figure 6 examines the frequency of visits by insurance type. Patients with no insurance are the only group who have a higher incidence of visiting their primary care physician less than 1x per year when compared to other frequency types.

Figure 7. Medical History by Insurance

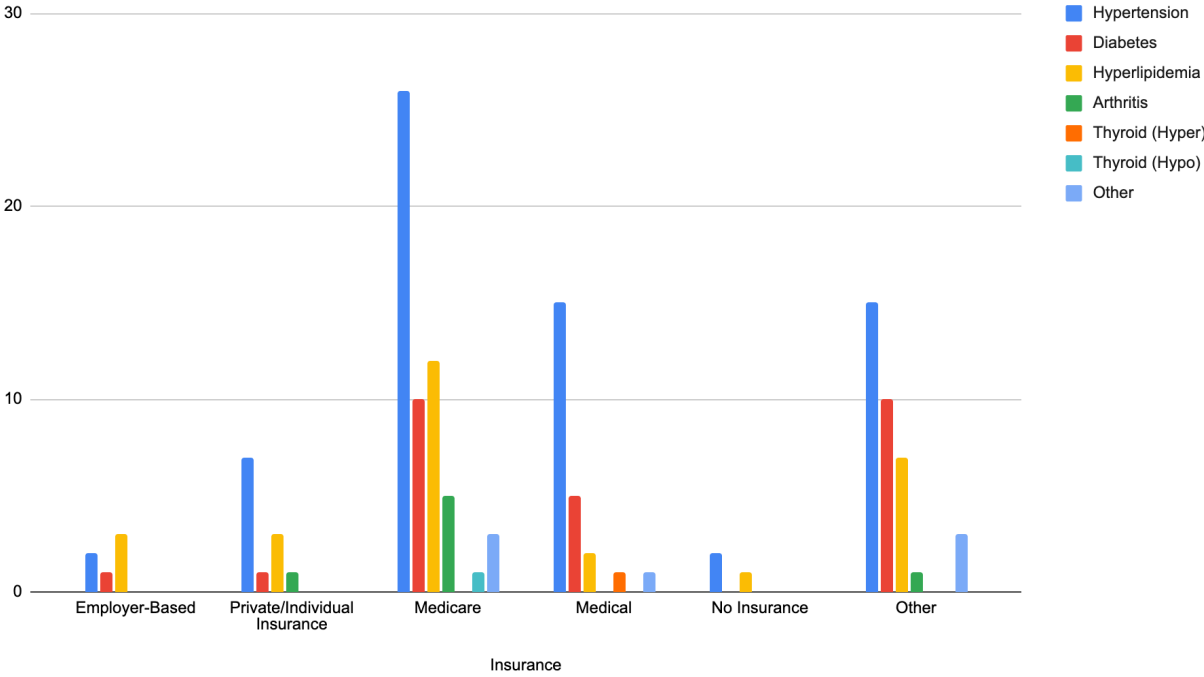


Figure 7 describes the relationship between medical history and insurance type. The most common medical issue regardless of insurance was hypertension. The second most common was diabetes and hyperlipidemia.

Figure 8. Education Level by Insurance

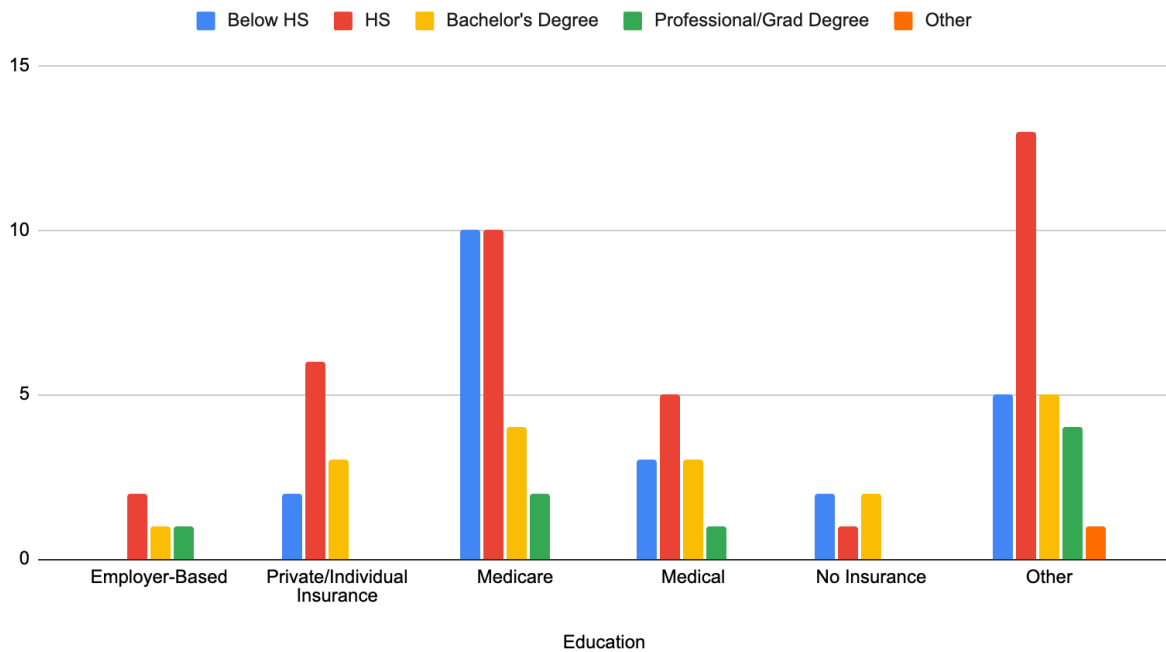


Figure 8 illustrates the relationship between education level and insurance type. Those with high school education and below as their highest level of education constitute a majority of the Medicare group. A majority of “other” insurance types are those with high school education.

Discussion:

BPSHI patients are mostly elderly, with an average age of 63 years old (Figure 1). Since individuals 65 and older are eligible for Medical and Medicare, BPSHI can encourage its patient population to enroll and educate them on eligibility (U.S. Department of Health & Human Services). Aside from “other,” Medicare was the most common insurance type, which aligns with the average age of the patient population (Figure 2). When examining the relationship

between insurance type and education, patients with Medicare and Medicaid have a higher prevalence of education levels below high school (Figure 8). The higher ratio can be partially explained by the fact that most BPSHI patients have high school as their highest education level, but also, it is possible that individuals with lower levels of education gravitate towards programs like Medicare and Medicaid, which are easier to navigate than other insurances (Figure 3; Ghaddar, 2021). Furthermore, patients with low educational attainment as well as ethnic minorities are likely to need assistance navigating health insurance systems, which further underscores the need for BPSHI to ensure that its patients fully understand how to obtain health insurance (Blumberg et al., 2016).

When examining overall trends in PCP frequency, most BPSHI patients visit their PCP about once a year (Figure 4). A lower PCP frequency can be attributed to the demographic factor of the BPSHI population; the South Asian Punjabi community is a minority group that has a high percentage of newly immigrated individuals and families. Even those who are lawfully living as immigrants in the U.S. decide to remain uninsured due to various enrollment barriers for health insurance (KFF Health coverage of immigrants). The uninsured are rarely visiting the doctors, which could potentially be very risky for the patients (Figure 6). A potential reason could be that patients with no insurance are rarely visiting the doctors because of the high costs of treatment without insurance. The proportion of patients visiting their PCP about once a month increases in patients with Medicaid, which can be attributed to age (Figure 6). Seeing as patients with Medicaid are generally older, they may have more chronic diseases that need to be monitored more frequently, such as hypertension. Hypertension was the most common disease across all insurance types, which is related to the high rates of hypertension in the South Asian population, which is only compounded by age (Figure 7; Agyemang & Bhopal, 2002). There is a direct link

between lack of insurance and poorer blood pressure control , which emphasizes the need for BPSHI to encourage its patients to obtain insurance (Duru et al., 2007).

One point to note is that insurance type was obtained by student scribes and not an official record of insurance, so the data may be inconsistent due to discrepancies such as language barrier. Uncertainty about insurance types by student scribes is likely why the “other” category for insurance has a high number of individuals. A majority of those who marked “other” as their insurance type were at the high school education level, and some of the BPSHI population with low levels of English literacy may not have understood the question of insurance type, or have knowledge about what their insurance is (Figure 8). In order to prevent such discrepancies, it is suggested that student scribes provide additional notes when selecting the “other” option for insurance type, and refer to a reliable translator if there is confusion due to a language barrier.

Conclusion

All in all, Medicare insurance types are associated with lower levels of attained education, and higher proportions of patients visiting their PCP once a month. All insurance types had a high prevalence of hypertension. To improve health outcomes for our patient population, BPSHI can help simplify the insurance enrollment process by explaining eligibility, and help patients break down language and cultural barriers preventing them from obtaining insurance and consistent health care. In the future, BPSHI can conduct more studies examining the relationship between insurance and other variables, such as employment, family size, and transportation to best understand how insurance affects our patient population.

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