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# EXPLORING MEDICAL MARIJUANA KNOWLEDGE AND PERCEPTIONS AMONG A COMMUNITY-BASED SAMPLE

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*The increasing number of states legalizing marijuana suggests that a growing majority of adults now see marijuana as offering more benefits than risks. As use increases, the need to better understand user characteristics and the nature of their beliefs also increases. **Purpose:** This exploratory study investigates the knowledge and perceptions of medical marijuana among community-based individuals. We theorize that demographic characteristics, socioeconomic status, social network, health status, and knowledge about marijuana are associated with the number of conditions the person believes marijuana treats. **Methods:** The study utilizes a convenience sample, a non-probability technique of individuals attending a local festival (n = 141). The dependent variable for this study is a count of the number of conditions participants believe medical marijuana may be used to treat. The study includes three measures of demographics and two measures of SES. The remaining measures, social network, health status, and marijuana knowledge were operationalized using proxy measures. The data were analyzed using OLS regression. **Results:** Most respondents (81%) were Black/African American, 77% were females, 38% were 41 years or older, 53% had a salary greater than \$30,000, and 87% had private insurance. The regression shows that having private insurance and higher perceived health status are negatively associated with the dependent variable. Having more comorbidities, better perceived mental health, knowing that marijuana may be obtained from a dispensary, and agreeing with its use have a positive association with the dependent variable. **Discussion:** Knowledge and beliefs about medical marijuana vary by user demographic. While some of the beliefs are accurate, some individuals are more willing to believe in the efficacy of medical marijuana solely based on anecdotal reports. Consumers of lower SES could benefit from targeted educational messages and access to medical-grade cannabis.*

**Introduction** | In 2017, medical marijuana was legalized in Florida with the passage of Amendment 2, which expanded the list of qualified medical conditions (<https://www.jdsupra.com/legalnews/florida-governor-signs-medical-39209/>).

Although approximately 71 percent of state residents approved the constitutional amendment allowing qualified physicians to place patients in the state marijuana registry, it is not known to what extent members of the minority community support the medical use of marijuana. Given the potential benefits of medical marijuana, ensuring equal access for all patients, especially people of color, is a critical task to reduce healthcare disparities.<sup>1</sup> A necessary antecedent to product use is knowledge and access to that product. Thus, this project explores the knowledge and perceptions of community-based individuals specific to medical marijuana use.

This study hypothesizes that knowledge of medical marijuana, which may be a precursor to use, is

associated with individual demographics, socioeconomic status (SES), social networks, health status, and knowledge and beliefs about marijuana.

## **Background** |

The increasing number of states legalizing marijuana suggests that a growing majority of adults now see marijuana as offering more benefits than risks.<sup>2</sup> “State-level marijuana liberalization policies have been evolving for the past five decades.”<sup>3(p.397)</sup> Despite these trends, research specific to medical marijuana remains in its nascency. Pacula and Smart<sup>3</sup> state, “...the overall scientific evidence of the impact of these policies is widely believed to be inconclusive.”<sup>3(p.397)</sup> The barriers to conducting marijuana research limit the ability of researchers to advance the body of knowledge from a clinical and theoretical perspective.<sup>4</sup> Therefore, this research partially relies on the illegal cannabis literature as the basis for model development.<sup>5</sup> The

literature shows variability in use by user demographics, SES, social networks, health status, and overall knowledge.

**User Demographics.** There is a strong linkage between demographics and the use of marijuana. For example, the use of marijuana varies by user age. Data from one national study show that between 2002 and 2019, illicit marijuana use among adults between the ages of 18 and 25 increased by 5.6 percentage points while use among adults 26 and older increased by 8.2 points during the same period.<sup>6</sup>

Race/ethnicity is another demographic variable strongly associated with marijuana use. Keyes, Wall, Feng, Cerda, and Hasin<sup>7</sup> reported that among high school African Americans, the rate of use of illegal marijuana is higher as compared to other racial or ethnic groups. However, among juvenile offenders, the use of marijuana by non-Hispanic whites is greater than that of other races/ethnicities.<sup>8</sup>

**Socio-economic Status.** SES is a broad term that covers an array of personal and environmental characteristics. The literature reports a negative association between SES and marijuana use.<sup>9,10</sup> Thus, individuals higher on the economic scale are less likely to engage in illegal marijuana use.

**Social Network.** The literature exploring the association between family structure, friendship networks, and substance use is well-developed. Researchers have posited that familial and social relationships or networks can influence the acceptance of societal norms, social learning, and self-control.<sup>11-13</sup>

**Health Status.** Health status is also a strong predictor of the use of medical marijuana and medical services. According to Williams and Skeels,<sup>14</sup> “using cannabis weekly is associated with a six percentage point reduction in the probability of being in excellent or very good health compared to someone who uses it less often”<sup>14(p.540)</sup>. Because users of medical marijuana have a diagnosed medical condition, they are more likely to report decreased perceived health.

**Knowledge and Beliefs.** A challenge facing individuals interested in qualifying for medical marijuana is finding accurate sources of information. Excluding internet sources, knowing where to get both medical marijuana and information on its efficacy is associated with use.<sup>15</sup> Additionally, as the perception of medical marijuana as a panacea becomes more widespread, the acceptance of its use may also become more acceptable.<sup>16</sup> Thus, despite the prevalence of misinformation or a lack of information, more individuals may nonetheless fully agree with its use.

**Methods |** This study seeks to determine the factors associated with knowledge of conditions treatable by medical marijuana. The research was supported by the Florida A&M University Medical Marijuana Education and Research Initiative.

**Participants and Sampling Technique.** The study targeted individuals living in a medium-sized county in Florida. Data were collected in February 2020. The study utilized a convenience sample. The decision to use convenience sampling was based on two factors: (1) the researchers were interested in the beliefs of minority individuals, and (2) is appropriate for initial or exploratory research. Nonetheless, convenience sampling has several limitations, not the least of which is the lack of generalizability. To address this limitation, Jager, Putnick, and Bornstein,<sup>17</sup> suggest the use of homogeneous samples. “By intentionally constraining the sampling frame to reduce the amount of sociodemographic heterogeneity, the chance of bias in sampling, as it relates to sociodemographic characteristics of the target population, is reduced (although not altogether eliminated).”<sup>17(p.7)</sup> The researchers limited the sample to an event known to attract a predominately Black/African American population of individuals. The targeted population consisted of individuals attending a local festival. Approximately 80% of attendees to this festival are of Black/African American ethnicity.

**Sample Size Determination.** The researchers contacted one of the festival organizers to request information on the number of conference attendees; the organizer indicated 3,000 individuals and families. For a typical probability sample, a sample size calculator may be used to determine the sample size needed to ensure that the margin of error is as low as possible. Data from Raosoft Sample Size calculator (<http://www.raosoft.com/samplesize.html>) indicates that a sample of 94 is needed for this exploratory study (margin of error = 10%; confidence interval = 95%; response distribution = 50%). The researchers collected 218; once responses with missing data were excluded, the final sample was 141 responses.

The extant literature further suggests using effect size to determine the practical significance of the findings.<sup>18</sup> The effect size for this study is reported in Table 2. Cohen<sup>19</sup> concluded that an effect size greater than 0.35 and an  $R^2$  greater than 0.25 suggests that the conclusions of the analysis have practical importance. Operationalization of Constructs. We theorize that demographic characteristics, SES, social network, health status, and knowledge and beliefs about marijuana are associated with the perception of marijuana use.

**Dependent Variable.** Knowledge about marijuana, whether accurate or not, is an antecedent to marijuana use. One method to address disparities in access to medical marijuana is by ensuring that potential users have the correct information. Thus, understanding the types of conditions individuals believe marijuana may be used to treat may provide insights into health promotion and education. The dependent variable for this study is a count of the number of conditions participants believe medical marijuana may be used to

treat. The survey provided a list of fifteen conditions: Cancer; Seizures; Glaucoma; HIV/AIDS; Crohn's disease and Inflammatory Bowel Disease; Sugar (Diabetes); High blood pressure (Hypertension); Arthritis; Multiple Sclerosis; Migraine headache; PTSD; Parkinson's disease; Insomnia and other sleep issues; Spinal Cord Disease; ALS (Lou Gehrig disease); and End of life care.

**Independent Variables.** The study includes three measures of demographic characteristics: race, sex, and age. These variables are dichotomized with subjects who possess the characteristic coded as "one" and those who do not, coded as "zero." The race variable compares those who selected "African American" as their race and those who did not. Females were coded as "one" in the sex/gender variable. The age variable allowed respondents to choose one of twelve groups ranging from 18 to 75 and older. Thus, the age group variable was dichotomized into two groups: those younger than 40 and those 41 and older.

The study included two measures of SES. The first measure captures those who reported an income of \$30,000 or more (coded as "one"). For some individuals, having health insurance may act as a proxy for SES; thus, the model captures having private insurance (coded as "one").

The social network construct is operationalized as a count of the number of people living in the respondent's home. Responses were grouped into three categories: 1 – 3 people, 4 – 6 people, and more than six people.

The study operationalizes health status using three variables. The first is a count of the number of comorbidities each participant indicated they had. The second variable asks respondents to rate their perceived physical health status on a five-point Likert scale where one is equal to "poor" and five is equivalent to "excellent." Similarly, the last variable, perceived mental status, asks respondents to rate their mental health status on a five-point Likert scale, ranging from poor to excellent.

The final construct, knowledge and beliefs, is operationalized as knowing that medical marijuana may be obtained from a dispensary ("yes" coded as "one") and agreeing with the use of medical marijuana ("yes" coded as "one").

**Data Analysis.** The data were analyzed using ordinary least squares regression in SPSS version 27.

**Results** | This research study was conducted to understand the knowledge and perceptions of community-based individuals on medical marijuana. Sample descriptives are provided in Table 1.

Respondents identified an average of nine conditions ( $SD = 5.2$ ) they believed marijuana could treat. Most respondents (81%) were Black/African American, 77% were females, and 38% were 41 years or older.

The two measures of SES reveal that over half of the respondents (53%) had a salary greater than \$30,000. The regression model was significant,  $F(11, 129) = 5.732, p \leq .000$  with an adjusted  $R^2 = .271$  (Table 2). The number of conditions respondents believed marijuana might be used to treat decreased by almost three points ( $\beta = -2.94, p < .05$ ) if the respondent had *private insurance*.

Each of the three health status variables was significantly associated with the dependent variable. With each increase in the *number of comorbidities or illnesses, respondents reported having*, there was a slight increase in the count of the number of conditions they believed marijuana might be used to treat ( $\beta = 1.11, p < .05$ ). Conversely, with a one-point increase in *physical health status*, the number of conditions respondents believed marijuana is used to treat decreased by over two points ( $\beta = -2.15, p < .01$ ). Finally, the dependent variable increased by two points with each point decrease in average mental health ( $\beta = 2.03, p < .05$ ). The two measures capturing marijuana knowledge and beliefs were positively associated with the dependent variable. Thus, respondents who knew *marijuana may be obtained from a dispensary* ( $\beta = 4.02, p < .001$ ), and those who *agreed with marijuana use* ( $\beta = 2.09, p < .05$ ) also believed that marijuana could be used to treat more conditions.

**Discussion** | With the passage of medical marijuana laws, public interest in and the use of cannabis has been increasing. Understanding consumer beliefs can help healthcare providers address misinformation and possibly reduce disparities associated with the lack of access.

This project explored the knowledge of medical marijuana among individuals living in a medium-sized county in Florida. The survey instrument focused on demographic characteristics, SES, social networks, health status, and knowledge and beliefs about medical marijuana. The results show that having private insurance and higher perceived health status are negatively associated with the number of conditions respondents believed marijuana could be used to treat. Conversely, having more comorbidities, better perceived mental health, knowing that marijuana may be obtained from a dispensary, and agreeing with the use of medical marijuana have a positive association with the dependent variable.

**Socio-Economic Status.** The literature has long since supported the association between SES and the use of illicit substances.<sup>9,10,20</sup> The findings of this project add another dimension to the established literature in that private insurance may affect consumers' perceptions of medical marijuana. Individuals with private insurance may not be interested in pursuing what may be viewed as experimental therapy. If individuals view medical marijuana as experimental, they may avoid

educating themselves on this therapy. It may be that those who lack private insurance may be more willing to believe in the efficacy of medical marijuana solely based on anecdotal reports rather than clinical evidence.

**Health Status.** The three health status measures present inconsistent findings, with two measures having a positive association with the dependent variable and one measure having a negative association. Individuals who had multiple comorbidities and perceived their physical health status as poor also believed that medical marijuana could treat several conditions. This finding is consistent with expectations. Individuals with chronic illnesses or who are generally sicker may exhaust the available resources within the traditional medicine system and may be more willing to pursue other paths toward wellness.

The finding for perceived mental health status did not follow expectations. Research has supported a negative association between perceived mental health status and drug use.<sup>21</sup> Thus, individuals who perceive their mental health status as poor are more likely to abuse drugs. Within the context of this project, perceiving your mental health as poor may cause some individuals not to trust their ability to educate themselves about marijuana, so they remain unaware of which conditions marijuana may be used to treat. Conversely, those who perceive their mental health status as very good may believe they are more knowledgeable about medical marijuana than individuals who perceive their mental health as poor. In other words, having a positive mental outlook will result in an individual believing they are knowledgeable about topics relevant to their health.

**Knowledge and Beliefs.** It has been established that although most "...patients wanted more information about medicinal cannabis from their health care providers, ...the majority of patients received information from sources outside the health care system."<sup>1(p. 128)</sup> One commonly used information source is cannabis dispensaries.<sup>22</sup> This is also consistent with our findings. "While information sharing is important for naïve medicinal cannabis users, it also presents the possibility of misinformation and false information"<sup>1(p. 128)</sup>

This study revealed that respondents who agreed with medical marijuana also believed it treats numerous conditions. Carliner, Brown, Sarvet, and Hasin<sup>2</sup> asserted that the public increasingly views cannabis as a harmless drug. Coupled with the proliferation of anecdotal reports concerning conditions that medical marijuana may be used to treat, the findings of this study are somewhat intuitive. Concomitantly, as the perception of medical marijuana as a panacea becomes

more widespread, the acceptance of its use may also become more acceptable.<sup>16</sup>

**Limitation.** The sampling technique presents a limitation to the study findings. Although there are several techniques by which to address the issue of representativeness of convenience sampling, the researchers chose to use one method, a homogeneous sample. The researchers mitigated this effect by performing an ad hoc effect size analysis, which revealed that the findings have practical importance. Nonetheless, "...the lack of representativeness of a given sample is liable to produce conclusions that are, at best, reportable only in reference to the sample, and, at worst, erroneously reported as existing in the population when no such effect is truly present."<sup>23-25</sup> Thus, study replication is necessary to determine the representativeness of the findings of this exploratory study.

**Implications for Public Health Practice |** Understanding consumer beliefs about medical cannabis is necessary to help healthcare providers address misinformation and possibly reduce disparities associated with the lack of access. Consumers of lower SES could benefit from targeted messages on the implications of medical cannabis use for approved medical conditions distinct from street-level marijuana.

A more complex public health concern is the increased use of marijuana in states that have legalized it for both medical and recreational use.<sup>26,27</sup> Increased recreational use poses additional public health concerns for driving safety, the association with opioid use, intoxication/overdose caused by more potent formulations, marijuana dependence or addiction, and psychosis.<sup>28,29</sup> In states where the recreational use of marijuana is legal, residents were more likely to believe marijuana smoke is safer than tobacco smoke<sup>26</sup>. However, users are at risk for possible smoke-induced pulmonary disorders.<sup>28</sup> Therefore, a concerted effort is necessary to educate users on the cellular damage to the lungs caused by smoking marijuana.

While the legalization of medical marijuana in many states has prompted the implementation of strict measures, the proliferation of cannabis-containing products marketed to consumers as a panacea for various health problems may escape strict government regulations and safeguards. This scenario may potentially contribute to increasing the incidence of injury and hospital emergency visits.<sup>26,28-31</sup>

The long-term public health effects of medical marijuana use are still unfolding, and further research is warranted to better inform the public and improve public health strategies.

**Table 1.** *Sample Descriptives (n = 141)*

	Mean or Percent	SD	Min.	Max
<b>Dependent Variable</b>				
Count of conditions marijuana used to treat	8.92	5.20	0	16
<b>Demographic Characteristics</b>				
Race: Black/African American	81%		0	1
Sex: Female	77%		0	1
Age: 41 and older	38%		0	1
<b>Socio-economic Status</b>				
Salary: Greater than 30K	53%		0	1
Has private insurance	87%		0	1
<b>Social Network</b>				
Number people living in household	1.32	.50	1	3
<b>Health Status</b>				
Count of comorbidities	1.60	.86	1	4
Perceived physical health status	1.69	.65	1	3
Perceived mental health status	1.44	.57	1	3
<b>Knowledge and Beliefs</b>				
Marijuana obtainable from a dispensary	49%		0	1
Agree with marijuana use	79%		0	1

**Table 2.** OLS Regression Model Results

Dependent variable: Count of the number of conditions marijuana used to treat	$\beta$	SE.	<i>p</i>	Lower CI	Upper CI
<b>Demographic Measures</b>					
Black/African American	-.46	1.03	.654	-2.49	1.57
Female	1.28	.91	.161	-.51	3.07
Age: 41 and older	.21	.93	.820	-1.63	2.06
<b>Socio-Economic Status</b>					
Salary: Greater than 30K	1.19	.91	.191	-.60	2.99
Has private insurance	-2.94	1.23	.018	-5.37	-.50
<b>Social Network</b>					
Number of people living in household	1.18	.79	.137	-.38	2.75
<b>Health Status</b>					
Number of comorbidities	1.11	.52	.034	.09	2.13
Perceived physical health status	-2.15	.77	.006	-3.67	-.62
Perceived mental health status	2.03	.83	.016	.38	3.68
<b>Knowledge and Beliefs</b>					
Marijuana obtained from a dispensary	2.09	.81	.011	.49	3.69
Agree with marijuana use	4.02	.99	.000	2.05	6.00
<b><math>R^2 = .3283</math>; Adjusted <math>R^2 = .271</math></b>					
<b><math>f^2 = .489</math>; <math>F(11, 129) = 5.732</math>, <math>p \leq .000</math></b>					

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