Using Health Literacy as a Tool to Address Rural Health Disparities during the COVID-19 Pandemic

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Rural areas are more susceptible to COVID-19 than urban areas due to a larger elderly population and care facilities for the elderly (Peters, 2020). Although the COVID-19 cases are lower in rural areas compared to urban areas in the U.S., the mortality burden of COVID-19 is exceptionally high in rural areas (Pro et al., 2020). The existing rural/urban health disparities, such as the higher rates of chronic diseases and less physical exercises among rural residents, contribute to their higher risk of severe illness from COVID-19 (American Heart Association News, 2020; Curley, 2020; Henning-Smith et al., 2020; Prusaczyk, 2020; Williams et al., 2020).

Rural populations also engage in preventive health behaviors against COVID-19 less than urban populations. A recent study shows that the mask wearing rates get lower as the counties became more rural (Pro et al., 2021). Another study reports that compared to urban residents, rural residents are less likely to engage in preventive behaviors against COVID-19 (e.g., physical distancing and wearing a mask when going out) and reported more negative attitude toward the effectiveness of performing preventive behaviors, even after controlling for demographic characteristics (Chen & Chen, 2020). Research found that if face masks were considered as an effective protection against COVID-19, rural residents would be more likely to wear masks than urban residents (Zhang et al., 2021). These studies identify a need to create interventions to enhance positive attitude toward the effectiveness of performing COVID-19 preventive behaviors (e.g., educating the usefulness of physical distancing and mask wearing to prevent the disease) among rural residents.

Research identified that health literacy is an important component associated with rural/urban health disparities related to COVID-19. Health literacy refers to "the degree to which individuals have the capacity to obtain, process and understand basic health information and services needed to make appropriate health decision" (Kindig et al., 2004). Health literacy is a broad multidimensional concept that includes the ability to understand factual health information (functional health literacy), the ability to act independently in a supportive environment (communicative health literacy), and the ability to critically analyze health information and control health-related situations (critical health information) (Nutbeam, 2000). A prior study found that

rural residents were less likely to evaluate the relevance or salience of the related health information (information appraisal); further, such poor information appraisal skill was associated with lower likelihood of holding a positive attitude about preventive behaviors, lower intention to adopt recommended behaviors, and lower level of subject norms, which lead to less engagement in preventive behaviors among rural residents (Chen & Chen, 2020).

One possibility to explain why rural residents have lower skills to evaluate the relevance or salience of COVID-19 health information than urban residents might be that the current media coverage about COVID-19 prevention mostly focuses on urban cities so rural residents might not be strongly motivated to engage in a thoughtful process of information appraisal and adopt the appropriate preventive measures as their specific needs have not been met and/or they think the information was not relevant to them (Chen & Chen, 2020).

To promote preventive health behaviors against COVID-19 in rural areas, health communication professionals can use tailoring health messages to meet rural residents' specific needs. For example, rural residents usually have a strong sense of community and resilience (Anton & Lawrence, 2014; Cutter et al., 2016). Therefore, calling upon rural residents' sense of community and emphasizing on how their actions can protect their neighbors and local economy could be an effective strategy to improve their information appraisal skills (Prusaczyk, 2020). Moreover, rural residents tend to rely on nurse practitioners and local health departments as usual sources of health information (Chen et al., 2019; Everett et al., 2009). These sources are effective channels for disseminating reliable information about COVID-19 in rural areas.

I mentioned above that health literacy has been identified as an important component associated with rural/urban health disparities related to COVID-19. Also, higher health literacy is associated with more COVID-19 awareness and protective behaviors (Gautam et al., 2021; Naveed & Shaukat, 2021). Therefore,

reviewing existing health literacy interventions developed specifically among rural residents would be beneficial to COVID-19 prevention in rural areas.

Shreffler-Grant and colleagues developed and implemented a health literacy intervention among older adults (men and women age 55 and above) living in eight rural communities in two northwestern states in the United States (Shreffler-Grant et al., 2021). The intervention took place at senior living centers over a seven-week period, which consisted four skill-building educational sessions: (1) health literacy and why it is important, (2) how to be safe when using dietary complementary and alternative therapies and over-the-counter medicines, (3) how to find and evaluate health information (including on-line information), and (4) how to be a wise partner with one's health care provider (Shreffler-Grant et al., 2021). Participants' health literacy level was measured using three different assessments including MSU CAM Health Literacy Scale (Shreffler-Grant et al., 2014), Newest Vital Sign (Weiss et al., 2005), and a single item question asking "how confident are you filling out medical forms by yourself" on a five point Likert scale from "not confident at all" to "extremely confident" (Chew et al., 2004). To evaluate the effectiveness of this program, the research team conducted pre-test, post-test, and a follow-up test five months after completing the intervention (Shreffler-Grant et al., 2021). Compared to the pre-test scores, participants' mean scores of MSU CAM Health Literacy Scale and the single item question increased at post-test but decreased somewhat at five-month follow-up. For the Newest Vital Sign scores, participants' health literacy continued to increase across the three time points. Shreffler-Grant's research team summarized the lessons learned from their intervention study such as gaining community access through rural networking and long term relationship-building, recruiting and retaining participants through local media communications, overcoming local resource limitations through budgeting for supplement resources, and promoting sustainability through leaving resources at project completion (Shreffler-Grant et al., 2018).

Parker and colleagues developed and implemented a health literacy intervention to improve oral health literacy and oral health literacy-related outcomes (e.g., use of dental services, oral health knowledge, oral health

self-care, and oral health-related self-efficacy) among Indigenous adults in rural Australia (Parker et al., 2012). The intervention consisted of five workshops with activities such as presentations, interactive displays, group discussions, and role plays across a one year time frame conducted in a local dental clinic (Ju et al., 2017; Parker et al., 2012). The topics of the workshops included dental disease processes, dental services access, and information about the dental clinic (Ju et al., 2017). To evaluate the effectiveness of this intervention, the research team used an experimental design that randomly assigned participants to the control group (n=197) and the intervention group (n=203). This intervention did not significantly improve oral health literacy or oral health literacy-related outcomes for the intervention group (Ju et al., 2017).

Arnold and colleagues developed and implemented a health literacy intervention to improve colorectal cancer (CRC) screening among patients aged 50 to 75 in four rural community clinics in Louisiana, the United States (Arnold et al., 2019). The intervention participants were provided with (1) the fecal immunochemical test (FIT) with simplified instructions, (2) an illustrated CRC pamphlet written on a fifth-grade reading level, (3) a step-by-step demonstration of the FIT using "teach-back" health literacy techniques (asking patients to repeat in their own words what they have been told) to confirm the accuracy and completeness of the patient's understanding, and (4) a phone call to remind them to complete and mail the FIT kit (Arnold et al., 2019). For the phone call reminder, participants were randomly assigned into two groups: they either received the call from a prevention counselor (the PC arm) or from a voice recording using plain language and motivational messages (the AC arm) (Arnold et al., 2019). This intervention was effective as it led to a 68% FIT completion rate, considering Healthy People 2020 set 70% as the goal (Arnold et al., 2019). There was no significant difference in FIT completion rate between the PC and the AC arm (Arnold et al., 2019).

This paper identifies the existing rural/urban health disparities during the COVID-19 pandemic. This paper also reviews several health literacy interventions among rural residents. The effectiveness

of these interventions was discussed. Health literacy programs have the potential to reduce rural/urban health disparities.

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