# Original Research Article

# Intervention is Urgently Needed to Address Poor Awareness of South Asian Senior Family Caregivers for Dementia Care: A Qualitative Study

# **ABSTRACT**

Introduction: The National Dementia Strategies in Canada emphasizes improving the knowledge of formal and informal caregivers for better dementia management.

Aim: This study aimed at exploring awareness and the attitudes of South Asian Bangladeshi senior family caregivers towards dementia care.

Methods: It was purposive sampling and a qualitative study. The study included 45 senior family caregivers (>55 years) for the face-to-face interviews in Toronto, Ontario. The study used semi-structured questions. The duration of the data collection was between February and March 2020.

Results: The study included the three areas related to dementia, such as a) the awareness of dementia, b: awareness of prevention and treatment as well as the awareness of caregivers about what is needed for better dementia care, and c) attitudes of caregivers towards dementia care. Many caregivers described dementia as memory loss and forgetfulness. According to the caregivers, anxiety, depression, and aging were the risk factors of dementia. The caregivers commonly perceived dementia as an unpreventable and incurable disease. Moreover, many caregivers did not know about the appropriate health providers who diagnosed and treated dementia, and they were not aware of non-pharmacological care of dementia. The senior caregivers perceived dementia as a shameful disease. They would not go for diagnosis if they had risks for dementia and would hide their dementia after diagnosis. Many confessed that training was essential to improve knowledge about dementia, but they did not want to be a caregiver for the person living with dementia.

Conclusion: The senior family caregivers had not enough awareness about dementia, prevention, and treatment. Dementia was associated with shame, and they had less interest in dementia care. Urgent educational training is needed in their language to improve knowledge, reduce stigma, engage them in dementia care, and achieve the goals of National Dementia Strategies.

Keywords: family caregivers, awareness, dementia, stigma, memory loss, anxiety, depression

#### 1. INTRODUCTION

Approximately 55 million people are living with dementia worldwide [1]. The numbers will rise to 152 million by 2050 [2]. Moreover, it estimates that 9.9 million people develop dementia every year, but many cases are underreported worldwide [2]. The current population in Canada is about 380 million [3]. The estimated dementia cases in Canada were almost 5.6 million, and it will rise to 9.4 million by 2031[4]. Every year, approximately 78,600 new cases are diagnosed. This incidence is 14.3 new cases per 1,000 in the senior population (65 years and older), so it is a public health concern in Canada [5, 6]. By 2031, it projects that the total yearly health care costs for Canadians with dementia will have doubled from \$8.3 billion to \$16.6 billion [5]. It includes health care costs, lost wages, out-of-pocket expenses of family members. The National Dementia Strategies of Canada launched in 2019. One of the core objectives of the strategies includes raising awareness among the general population, health care professionals, and formal and informal caregivers [7]. The government and local community organizations work together to support and provide services to create awareness in general populations, professionals, and caregivers to improve the quality of life of the persons living with dementia.

Caregivers are potential sources of care in Canada. One in four Canadians are caregivers for their family members, and approximately 8 million caregivers (<15 years) provide care to family members or friends living with a chronic condition and health problems related to older age [8]. Among these caregivers, about 3.8 million are senior informal caregivers (>45 years) who provide care for senior-family members and friends [9]. The informal caregivers do not have any formal training for taking care of family members. They are unpaid, are invisible, and their supports are rarely recognized [10, 11]. These family caregivers provide care to the person living with chronic disease and dementia and help them in their daily activities [12, 13, 14, 15,16]. India, Pakistan, Sri Lanka, Nepal, and Bangladesh are South Asian and are the visible minority group in Canada [17]. In South Asian families, the informal caregivers include children, daughter-in-law, and senior family members. The seniors in South Asian families are the caregivers for their spouses or peers because their children are busy in immigrant life, and the families cannot afford to bear the cost of a private caregiver for the seniors.

The family caregivers are the first person who can notice any symptom of the illness of family members. Awareness and knowledge of family caregivers are essential to managing any disease. In the same way, understanding the symptoms is also crucial for dementia diagnosis so that the caregivers can provide family members with better care from the beginning. If the caregivers' knowledge is not adequate, caring for persons living with dementia is not enough. For example, in the UK, Bangladeshi caregivers have limited knowledge about dementia, so they delay seeking care for the family members [18]. In Canada, Bangladeshi family caregivers might not have adequate knowledge about dementia because of the language barrier, so they have limited access to the resources to improve their awareness of dementia. We have the National Dementia Strategies for creating more awareness of dementia among caregivers for effective care [7], but there is information lacking about the Bangladeshi Canadian caregivers regarding their dementia care at home. The study included Bangladeshi senior family caregivers because they are caregivers and spend maximum time for their spouses and other family members as caregivers [19]. The study had two broad research questions. a. do they have enough awareness in terms of dementia, prevention, and treatment? b. what attitudes are towards dementia care? The study explored the awareness of the Bangladeshi Canadian caregivers (> 55 years) about dementia and their attitudes towards dementia care. The federal and provincial governments highlight improving the knowledge of dementia across Canada, so the findings of the study would be helping improve awareness and to change the attitudes towards dementia care if needed.

#### 2. METHODS

#### 2.1 STUDY DESIGN

Bangladeshi-Canadian Community Services (BCS), an ethnic non-profit organization, has been serving the South Asian Bangladeshi community in mainly Crescent Town and Oakridge neighborhood (hence called Taylor Massey neighborhood) in Toronto since 2000 [19]. This neighborhood has a higher concentration of Bangladeshi communities in Toronto [20]. Around 310 seniors (> 55 years) registered with BCS from 2017 to19 for receiving services like government information, health workshops, medical escort services, home services, and social connection. The study recruited the senior caregivers using the registered list. We applied qualitative research. Qualitative research could explore detailed perspectives, including experience, meaning, beliefs, and attitudes [21]. Moreover, this study did not have enough caregivers for the quantitative research to measure the statistical outcomes. The study applied structured questionnaires for socio-demographic profiles and semi-structured questions for understanding the perspective (in terms of dementia, prevention, treatment, needs) and attitudes towards dementia care. The Interviews were conducted face-to-face from February 2020 to March 2020 in the Bengali language because 71% of them (Table 1) had language barriers.

#### 2.2 SAMPLING AND SELECTION

We did not have the lists of all Bangladeshi-senior caregivers living in Toronto, so it was purposive sampling. The interviewers contacted seniors using the senior register list and informed them about the study and its purposes over the phone. The interviewers wanted to know from the possible participants about the nature of care for spouses/ family members/ friends as a caregiver. The study set three criteria, such as a. the participants perceived themselves as a caregiver for family members, relatives, and friends, b. the participants provided seniors with medication assistance, help for daily activities like cooking or preparing food, making the bed for the seniors, and medical escort support to go to the health care system, and c. and the participants were able to provide information. Eighty-eight seniors met the criteria out of 310 from the registered list. However, 55 agreed to participate in the survey. The participants originated from Bangladesh, and they migrated to Canada with family members, such as sons and daughters.

### 2.3 TRAINING, QUESTIONNAIRE, AND DATA COLLECTION

Four students from social backgrounds engaged in data collection. They were called interviewers. The interviewers participated in two-day training at the BCS office, and the principal investigator (PI) conducted the training. The training included the rapport build-up with caregivers, interview techniques, explanations, and role play. The data collection process had three parts in the study: a. a small group discussion consisting of five seniors to generate questions about dementia and attitudes towards care, b. the pre-test, and c. the final interview. In the pre-test survey, five senior caregivers participated in the surveys. It helped the interviewers understand the responses or answers got from the caregivers and check inconsistency in the caregiver's information before finalizing the questions for the final interviews. Then the PI read the caregiver's responses meticulously after the pre-test, talked to interviewers when any clarification was needed and modified the questionnaires for the final interview. Finally, 45 senior caregivers participated in the final interviews or surveys. The interviewers invited the participants for a face-to-face interview at the BCS office. They

completed the interviews during February-March 2020 before lockdown started in Ontario due to the COVID-19. The study questionnaire included structured questions for socio-demographic characteristics information of the caregivers and semi-structured questions for understanding the awareness about dementia and attitudes towards dementia care (given below). The interviewers used an audio recorder while interviewing the participants, transcribed the narrations from the audio recording, and translated them into English. The individual interview took 30 to 45 minutes. After completing each interview, the PI immediately checked any information missing or inconsistency in their answers and consulted the interviewers for further action if needed. In addition, we re-interviewed 15 percentages of past interviews to check any discrepancy with previous interviews. Survey questions:

- 1. Socio-demographic information (age, gender, school, ...sources of income), etc.
- 2. What do you know about dementia and the symptoms and risk factors of dementia?
- 3. How do we prevent dementia, and what is the treatment of dementia?
- 4. How can dementia affect one's life?
- 5. How can you manage the person living with dementia?
- 6. What is your attitude toward the person living with dementia?
- 7. How do you help support the person living with dementia?

# 2.4 ANALYSIS

Two students received special training in thematic analysis. They had read the participant's answers repeatedly to get familiar with the meaning of answers and their implications. Thematic analysis followed six stages like a. familiarization with the information, b. generating initial codes, c. searching for themes, d. reviewing themes, e. defining and naming themes, and f. producing the report [22]. The principal investigator checked the codes and themes to identify the accuracy and validity. The whole process did manually. Also, we applied descriptive analysis (just frequency).

#### 3. RESULTS

#### 3.1 SOCIODEMOGRAPHIC CHARECTERISTICS

In the study, the male and female caregiver ratio was 40% (18) and 60% (27), respectively (Table 1). The age range was between 55-72 years. Three-fourth of caregivers (77.8%, 35) completed 10-grade and more school educations, and they (68.9%, 31) lived in Canada for more than ten years. A great majority (71.0%, 32) had an English language barrier. The financial support was government sources (60.0%, 27), followed by family support (40.0%, 18). About 42 caregivers (> 90%) had chronic diseases. The health information sources were workshops (75.6%, 34), followed by electronic sources (16, 35.6%), print media (26.7%, 12), and health professionals (16%, 7).

Table 1. Socio-demographic characteristics of senior family caregivers (N=45)

Socio-demographic characteristics	n (%)
Sex	
Male	18 (40.0)
Female	27 (60.0)
Education	, ,
Completed ≥ 10 grades	35 (77.8)
Completed < 10 grades	10 (22.2)

Age	
55-59 years	8 (17.8)
≥ 60 years	37 (82.2)
Living in Canada	
< 10 years	14 (31.1)
≥ 10 years	31 (68.9)
Perceived language barrier	
Yes	32 (71.1)
No	13 (28.9)
Financial supports	
Government <sup>a</sup>	27 (60.0)
Family	18 (40.0)
Have Chronic diseases <sup>b</sup>	
Yes	41 (91.1)
No	4 (8.9)
Health information sources	
Health workshops	34 (75.6)
Electronic media <sup>c</sup>	16 (35.6)
Print media <sup>d</sup>	12 (26.7)
Health institution (doctor/hospital)	7 (15.6)

<sup>&</sup>lt;sup>a</sup>pension, benefit and support program, <sup>b</sup> diabetes, high pressure, high cholesterol, <sup>c</sup> electronic media= television / YouTube / websites, <sup>d</sup>print media= news paper/magazine/book

#### 3.2 GENERAL AWARNESS OF DEMENTIA

Many caregivers (93.3%, 42) described that dementia as the disease of memory loss and forgetfulness (Table 2). The common symptoms of dementia were forgetfulness about the personal belongings where they put them (44.2%, 22), forgetfulness about the name and face of known persons, forgetfulness about the home locations (26.7%, 12), and forgetfulness of recent behaviors (15.5%, 7) (Table 2).

A male caregiver, 63 years, said,

"Immediate after eating food, the person living with dementia often forgets it and asks for food again and again."

Furthermore, many caregivers (55.6%, 25) indicated that the person living with dementia forgot to take medication, take a bath, and change clothing (55.6%, 25). Some caregivers said that the persons moved around when they lost their way to come home (22.2%, 10) (Table 2).

A female caregiver, 61 years, said,

"My husband has dementia. When he gets the chance, he goes out. He cannot come home. He forgets the way to return home, so he moves around."

Regarding the risk, half of the caregivers (51.1%, 23) said that anxiety and depressions were the risk factor for dementia.

A woman caregiver, 64 years, said,

Furthermore, many caregivers (48.8%, 22) said older age was another risk factor for dementia (Table 2).

A female caregiver, 62 years, said,

Genetics (20%, 9), loneliness (15.5%, 7), chronic diseases (6, 13.3%), injury to brain cells (15.5%, 7), poverty (11.1%, 5), and poor nutrition (11.1%, 5) were also mentioned as risk factors (Table 2).

Table 2. Awareness of senior family caregivers about dementia, symptom, and risk (N=45)

Themes	Subthemes	Codes	n (%)
	Dementia definition	Forgetfulness and memory loss	42 (93.3)
Awareness of dementia	Symptom		45 (100.0)
		Forgetfulness about -putting glasses, pen somewhere	22 (44.2)
		-familiar person's name and face -home locations -recent behaviors	12 (26.7) 12 (26.7) 7 (15.5)
		-taking medication / wearing dresses/ bathing Move around	25 (55.6) 10 (22.2)
	Awareness of risks		38 (84.4)
		Natural risk -older age -hereditary Health risk	22 (48.8) 9 (20.0)
		-brain injury -chronic disease -anxiety and depression	7 (15.5) 6 (13.3) 23 (51.1)
		Socioeconomic risk -loneliness -poverty -poor nutrition	7 (15.5) 5 (11.1) 5 (11.1)

# 3.3 AWARENESS OF PREVENTION AND TREATMENT OF DEMENTIA

A great majority of caregivers (51.1%, 23) were not aware of any preventive measures (table 3). The rest caregivers said that socialization, stress or anxiety-free life, engagement in daily activities, and medical advice could prevent dementia (49.9%, 22). Furthermore, many of

<sup>&</sup>quot;When ones have anxiety and depression, the brain does not work properly, so one forgets even a small thing. It is dementia."

<sup>&</sup>quot;As we are aging, our brain cannot work properly. Thus, forgetfulness is common after 60 years."

them had no awareness about the ways of halting the progress of dementia. However, every two in five caregivers (42.2%, 19) reported that counseling; family support, medical advice, and religious faith could prevent further progress of dementia. A great majority of caregivers (55.6.4%, 25) did not know the providers for diagnosing and treating dementia (Table 3).

A female caregiver, 59 years, said,

"I went to the family physician with my sister because she forgets what she cooks. She forgets the name of her son. She is restless, and she cannot sleep at night. Her family physician did not say anything after listening to us about her problem. The doctor did not refer her to a specialized doctor. We are confused about where to go."

Some caregivers (40%,18) preferred to go to the family physicians because they (35.6%, 16) had no option except family physicians for identifying and treating dementia. Again, many caregivers (57.8%, 26) did not believe in drug treatment against dementia (Table 3).

A male caregiver, 67 years, said,

"This is useless to go to a doctor because there are no medicines to treat forgetfulness (dementia). No one can prevent memory loss. It happens at older ages."

The higher number of senior caregivers (86.6%, 39) did not know the benefit of non-pharmacological approaches (recreational activities) to improve the quality of life of the persons living with dementia (Table 3).

One female caregiver, 64 years, said,

"Nobody tells me that recreational activities could help the person living with dementia improve the brain function."

# 3.4 WHAT NEEDS FOR DEMENTIA CARE

One-fourth of caregivers (26.7%, 12) reported that they did not know about their needs for care towards the person living with dementia.

One female caregiver, 61 years, said,

"The persons living with dementia forget when they eat, and they cannot remember where they put their belongings, so we should not focus on the needs of them, let them go with their own pace."

The caregivers (42.2%, 19) needed close supervision for helping daily activities and movement of persons living with dementia (Table 3).

A male caregiver, 65, said,

"The person living with dementia goes here and there. They cannot come back home. They can be lost. We have to keep eyes on them."

Only one-fourth of caregivers (24.4%, 11) needed adequate knowledge for dementia care towards the family members living dementia (Table 3).

A female caregiver, 61 years, said,

Furthermore, many caregivers (46.6%, 21) needed classroom training for a better understanding of dementia and to provide care. However, one-fifth (20%, 9) needed close mixing with the persons living with dementia to learn about dementia care (Table 3). A female caregiver, 55 years, said,

"If I mix with the person living with dementia, I can learn the requirements of them practically."

Table 3. Awareness of senior family caregivers about prevention, treatment, and needs for dementia care (N=45)

Theme	Subthemes	Codes	n (%)
	Prevention		
	Fievention	No awareness	23 (51.1)
		Have awareness <sup>a</sup>	22 (49.9)
	Providers		
		No ideas	25 (55.6)
		Family physicians	18 (40.0)
		Alzheimer's Society	6 (13.4)
	Treatment		
		No drug treatment	26 (57.8)
Awareness of Prevention,	OX	No awareness about non- pharmacological treatment <sup>b</sup>	39 (86.6)
treatment, and needs	Delay in progress		
	Dolay in progress	Have awareness <sup>c</sup>	19 (42.2)
	Needs of caregivers for dementia care		
		No knowledge	12 (26.7)
		Close-supervision d	19 (42.2)
		Complete knowledge	11 (24.4)
		Class room training	21 (46.6)
		Interaction with demented persons to learn	9 (20.0)

<sup>&</sup>lt;sup>a</sup>ways of prevention: socialization, free from stress/anxiety, deep engagement in activities, doctor's advice, and brain work, <sup>b</sup>recreational activities like music, physical activities, crafting, etc (non-pharmacological approach) to improve the quality of life through community services, <sup>c</sup>counselling, family support, doctor's advice, religion faith, <sup>d</sup>supervision: movement, daily activities,

# 3.5 ATTITUDE TOWARDS DEMENTIA CARE

<sup>&</sup>quot; I need to read about dementia care. We can know better by reading books."

Many caregivers (84.4%, 38) were not afraid of dementia (Table 4).

One female caregiver, 63 years, said,

"It is not dangerous because no one dies of dementia. Most people are forgetful when dementia affects them."

A higher number of caregivers (44.4%. 20) reported that they would sympathize with a person living with dementia because they could not remember the past. However, many caregivers (55.6%, 25) thought that dementia was shameful for the person living with dementia and for the caregivers.

A male caregiver, 65 years, said,

"When my sister sees my brother-in-law, she calls him my father or her son. I feel shy. I correct her. My brother-in-law becomes angry at her. We cannot go outside with her. It disturbs the family life."

Furthermore, the caregivers (24.4%, 11) reported that persons living with dementia often forget, and people call them mad and foolish.

Half of the caregivers (51.1%, 23) would not go for dementia diagnosis if they had risks or symptoms of dementia (Table 4). Again, many caregivers (48.8%, 22) would hide their dementia from neighbors because the neighbors would disclose the information in the community. One-third (35.6%, 16) would hide dementia from both family and neighbors as it was embarrassing when people laughed at persons living with dementia. However, many caregivers would seek help from family members if they needed dementia care.

The interviewers asked the caregivers about the way of engagement in the care of dementia. Two-third of caregivers (68.8%, 31) would only teach the community people and the family members about dementia. A few caregivers (15.5%, 7) said that they would bring the person living with dementia to the healthcare system (doctor, hospital). However, many caregivers (77.8%, 35) would not be caregivers for persons living with dementia.

A female caregiver, 61 years, said,

"I need to take care of myself and my husband. I do not want to take more burdens on my shoulders if my husband has a forgetfulness problem."

Table 4. Attitudes of seniors family caregivers towards person living with dementia and dementia care (N=45)

Theme	Subthemes	Codes	n ( %)
	Towards deme	ntia	
		Dementia is not a dangerous disease	38 (84.4)
		Dementia is shameful	25 (55.6)
		They are mad and foolish	11 (24.4)

		Caregivers should be kind and helpful	22 (44.4)
Attitudes towards dementia care	Towards demention	a diagnosis Caregivers would not go for dementia diagnosis	23 (51.1)
	Towards hiding of dementia from	aregiver's	
		Community	22 (48.8)
		Family and community	16 (35.6)
		No tendency to hide	7 (15.6)
	Attitudes in dementia care		
		Caregivers would only teach people about dementia	31 (68.8)
		They would not be a caregiver for dementia care	35 (77.8)
		Caregivers would go to healthcare system with them	7 (15.5)

#### 4. DISCUSION

The study explored the awareness of senior family caregivers about the symptoms, risk factors, protective measures, treatment, and attitudes towards dementia care. The caregivers had low awareness about dementia, symptoms, risk factors, and protective measures. Again, the awareness about the benefit of pharmacological care (drug treatment) and non-pharmacological care (recreational activities) was limited. Dementia was associated with shame, and the caregivers would hide dementia from their surroundings. Many caregivers would not engage in dementia care. Poor knowledge, stigma, and less interest in dementia care for the persons living with dementia can affect the diagnosis and the quality of life of the person living with dementia in the South Asian Bangladeshi family. The study findings and its implication are described below.

In the study, the caregivers described dementia as forgetfulness and loss of memory due to older age. The concept of dementia is more than the caregiver's perception [23,24, 25]. The studies in China, Cuba, and India found a similar poor perception about dementia [26, 27, 28]. Furthermore, the study caregivers had incomplete knowledge about symptoms of dementia. It can delay early diagnosis and management [29]. It is urgent to create awareness among Bangladeshi Canadian family caregivers before dementia gets the worst in the family. High cholesterol, blood pressure, diabetes, vascular diseases, depression, genetics, obesity, and habitual smoking are significant risk factors for dementia [30,31,32,33,34,35,36]. However, the study caregivers reported anxiety and depression, and older age as the main risk factors for dementia. The awareness of risk factors in China is better than that of the study caregivers [37]. The low level of knowledge about the risk factors will not help the caregivers to prevent family members and themselves from dementia. In addition, the caregivers perceived that dementia was an unpreventable disease. Similar findings were seen across the world [38,39]. However, physical exercise, brain activities could prevent dementia [40]. Education about risk and protective factors is crucial for the Bangladeshi community living in Canada to tackle dementia in the future.

Furthermore, the caregivers did not believe in the pharmacological treatment of dementia, so they were not aware of the medical benefits of drug treatment. China got similar findings [26]. Non-pharmacological approaches (like recreational activities), such as music, physical and meaningful activities that are brain-stimulating, could promote the quality of life of the person living with dementia [41-43]. The study caregivers were also not aware of the benefit of non-pharmacological care or recreational activities for persons living with dementia. The local community centers could provide the caregivers with the scope to learn about the benefits by engaging them in recreational activities.

The senior caregivers perceived that dementia was shameful. It is a common perception worldwide [44,26]. For this, the study caregivers would hide their dementia from the family members. Again, the study explored that caregivers did not want to engage in dementia care for persons living with dementia. Limited awareness about dementia care and fear of shame associated with dementia could be reasons. These could delay effective dementia care in the family. Research is required about how to engage caregivers in dementia care. Moreover, social workers and health professionals can make dialogue, conferences, and workshops to engage caregivers in caring for persons living with dementia.

The study has limitations. It included a convenient sampling based on the availability of caregivers. The findings cannot be generalized for the national population, but the results could relate to other South Asian ethnicities because of the same cultures or cultural similarities. Thus, the policymakers could get new information for taking initiatives for the South Asian caregivers. The study included qualitative research because of the small sample size as we did not have a complete list of caregivers living in Toronto, funding, and resources for quantitative studies. However, qualitative research could explain the in-depth perception of dementia. In those cases, 45 caregivers and their explanations towards dementia and its care were good enough to understand the context. We could not apply different methods for triangulation because of time, shortage of resources, and no funding for the study. We set the guidelines to maintain the quality of the study at different levels, such as training for interviewers, data collection, record-keeping system, re-interview. Though we have limitations, however these findings of the study help plan effective interventions.

# 4. CONCLUSION

In conclusion, dementia is prevalent in Canada; however, the South Asian Bangladeshi senior family caregivers in Canada had limited knowledge about dementia that will not help family members living with dementia. In addition, the stigma existed in the caregivers, and they were not much interested in caring for the persons living with dementia. Thee all affect the quality of care for persons living with dementia. Training, effective implementation of the objectives of National Dementia Strategies in South Asian Bangladeshi families, and community supports are needed to increase awareness of caregivers, reduce stigma, and increase caregiver's involvement in dementia care. The study applied convenient sampling and had a small sample size, but it gives ideas and new information about the current awareness of Bangladeshi senior family caregivers in Toronto.

#### CONSENT

Before starting the interview with the participants, the interviewers read the purpose, objectives of the study, and way of maintaining confidentiality to the participants. The interviewers also informed the participants that we used the collected information for the publication, and we did not use the participant's name anywhere else. If participants needed

clarification, the PI would address their concerns. If participants agreed to provide the information, the interviewers invited the participants to give us the written consent. We developed a standard consent form to sign. We applied the face-to-face interview and used audio-record while interviewing.

#### ETHICAL APPROVAL AND ISUUES

The internal ethical board of BCS went through the proposal for ethical issues and approved the study. There was no medical investigation on the participants or any clinical trial, so we did not require rigorous ethical considerations. The participants gave us written consent for a verbal interview. Also, we followed the Helsinki Declaration of Ethical Principles for Human Subjects and maintained confidentiality strictly. The participants agreed to participate, and then the interviewer started interviewing. The participant's answers or narrations were anonymous. The participants had the right to refuse to answer any question, to stop giving information at any point of the interviews. They were not bound to return. We did not use any person's name in the study. The participants had the right to know the findings for their clarification. The interviewers kept information in a separate area, so only the principal investigator accessed the information.

#### REFERENCES

1. World Health Organization. Dementia: key Facts. WHO. 2021. Accessed 29 November 2021.

Available: https://www.who.int/news-room/fact-sheets/detail/dementia.

2. World Health Organization. Global Action Plan on the Public Health Response to Dementia 2017-2025. WHO.2017. Accessed 29 November 2021.

Available: <a href="https://www.who.int/publications/i/item/global-action-plan-on-the-public-health-response-to-dementia-2017---2025">https://www.who.int/publications/i/item/global-action-plan-on-the-public-health-response-to-dementia-2017---2025</a>.

3. Statistics Canada (2020). Canada's population estimates, third quarter 2020. Statistics Canada. 2020. Accessed 28 November 2021.

Available: <a href="https://www150.statcan.gc.ca/n1/en/daily-quotidien/201217/dq201217b-eng.pdf">https://www150.statcan.gc.ca/n1/en/daily-quotidien/201217/dq201217b-eng.pdf</a>?st=emD4gQB9

4. Alzheimer's Society of Canada. Prevalence and Monetary Cost of Dementia in Canada. The Alzheimer Society of Canada in collaboration with the Public Health Agency of Canada Toronto, Ontario, Canada. 2016. Accessed 25 November 2021. Available:

https://archive.alzheimer.ca/sites/default/files/files/national/statistics/prevalenceandcostsofdementia\_en.pdf.

5. Public Health Agency of Canada. Dementia in Canada; Including Alzheimer's Disease Highlights from the Canadian Chronic Diseases Surveillance System. 2017. Accessed 22 November 2021.

Available: https://www.canada.ca/content/dam/phac-

 $\frac{aspc/documents/services/publications/diseases-conditions/dementia-highlights-canadian-chronic-disease-surveillance/dementia-highlights-canadian-chronic-disease-surveillance.pdf$ 

6. Public Health Agency of Canada. A Dementia Strategy for Canada, Together We Aspire. Public Health Agency of Canada. 2019. Accessed November 12 2021.

Available: https://www.canada.ca/content/dam/phac-

aspc/images/services/publications/diseases-conditions/dementia-

strategy/National%20Dementia%20Strategy\_ENG.pdf

7. Public Health Agency of Canada. A Dementia Strategy for Canada, Together We Aspire: 2020 Annual Report. 2020. Accessed 12 November 2021. Available:https://alzheimer.ca/sites/default/files/documents/PHAC-A-dementia-strategy-for-

Canada-2020-annual-report.pdf.

- 8. Statistics Canada. Caregivers in Canada, 2018. 2020. Accessed 20 October 2021. Available: <a href="https://www150.statcan.gc.ca/n1/en/daily-quotidien/200108/dq200108a-eng.pdf?st=5JsbcsjQ">https://www150.statcan.gc.ca/n1/en/daily-quotidien/200108/dq200108a-eng.pdf?st=5JsbcsjQ</a>.
- 9. Turner A, Findlay L. Informal Caregiving for Seniors. Statistics Canada, Catalogue no. 82-003-XPE Health Reports. 2012; 23 (3). Accessed 12 October 2021.

  Available: <a href="https://www150.statcan.gc.ca/n1/en/pub/82-003-x/2012003/article/11694-eng.pdf?st=Z5dqv5wi">https://www150.statcan.gc.ca/n1/en/pub/82-003-x/2012003/article/11694-eng.pdf?st=Z5dqv5wi</a>
- 10. The Change Foundation. A profile of family caregivers in Ontario; 2018. The Change Foundation. 2019. Accessed 24 October 2021. Available: <a href="https://www.changefoundation.ca/site/wp-content/uploads/2016/06/Profileof-Family-Caregivers-report-FINAL.pdf">https://www.changefoundation.ca/site/wp-content/uploads/2016/06/Profileof-Family-Caregivers-report-FINAL.pdf</a>.
- 11. National Institute on Ageing. Why Canada needs to better care for its working caregivers. Toronto. National Institute on Ageing. 2018. Accessed 16 October 2021. Available:

https://static1.squarespace.com/static/5c2fa7b03917eed9b5a436d8/t/5c9a5f34652dea9cba554c05/1553620802081/working-caregivers.pdf.

12. World Health Organization. Supporting Informal Caregivers of People Living with Dementia. WHO. Accessed on 10 March, 2021. Available:

https://www.who.int/mental\_health/neurology/dementia/dementia\_thematicbrief\_informal\_care.pdf.

13. National Audit Office. Improving Services and Support for people with Dementia. The Stationary Office (TSO), 2007. Accessed 15 March 20 21. Available:

https://webarchive.nationalarchives.gov.uk/ukgwa/20170207052351/https://www.nao.org.uk/wp-content/uploads/2007/07/0607604.pdf.

- 14. Brodaty H, Green A. Who cares for the carer? The often forgotten patient. Aust Fam Physician. 2002; 31(9):833-46.
- 15. Dening KH, Greenish W, Jones L, Mandal U, Sampson EL. Barriers to providing end-of-life care for people with dementia: a whole-system qualitative study. BMJ Support Palliat Care. 2012; 2(2):103-07. doi: 10.1136/bmjspcare-2011-000178.
- 16. Prince M, 10/66 Dementia Research Group. Care arrangements for people with dementia in developing countries. Int J Geriatr Psychiatry. 2004;19(2):170-77. doi: 10.1002/gps.1046.

- 17. Tran K, Kaddatz J, Allard P. South Asians in Canada: Unity through diversity. Statistics Canada. 2005. Accessed 25 September 2021. Available: <a href="https://www150.statcan.gc.ca/n1/en/pub/11-008-x/2005002/article/8455-eng.pdf?st=7KufreTs">https://www150.statcan.gc.ca/n1/en/pub/11-008-x/2005002/article/8455-eng.pdf?st=7KufreTs</a>.
- 18. Hossain MZ, Stores R, Hakak Y, Crossland J, Dewey A. Dementia Knowledge and Attitudes of the General Public among the Bangladeshi Community in England: A Focus Group Study. Dement Geriatr Cogn Disord. 2019;48(5-6):290-96. doi: 10.1159/000506123.
- 19. Bangladeshi-Canadian Community Services (BCS). Annual Report 2019. Accessed 21 August 2021. Available: <a href="https://d7a4d16e-7030-4206-b1b5-30377021fe2f.filesusr.com/ugd/4f3dc7\_6402b72efce34a41a744e2a83fca530e.pdf">https://d7a4d16e-7030-4206-b1b5-30377021fe2f.filesusr.com/ugd/4f3dc7\_6402b72efce34a41a744e2a83fca530e.pdf</a>.
- 20. Michael Garron Hospital (MGH). Our Community our Services. 2018. Accessed 21 August 2021. Available: <a href="https://www.tehn.ca/sites/default/files/file-browser/our-community-our-services-2018-update.pdf">https://www.tehn.ca/sites/default/files/file-browser/our-community-our-services-2018-update.pdf</a>.
- 21. Hammarberg K, Kirkman M, S. de Lacey S. Qualitative research methods: when to use them and how to judge them. Human Reproduction. 2016; 31(3): 498-501. doi:10.1093/humrep/dev334.
- 22. Braun V, Clarke V. Using thematic analysis in psychology. Qualitative Research in Psychology. 2006; 2(2):77-104.
- 23. Wang M, Xu X, Huang Y, Shao S, Chen X, Li J, Du J. Knowledge, attitudes and skills of dementia care in general practice: a cross-sectional study in primary health settings in Beijing, China. BMC Family Practice. 2020; 21(89): 1-9. https://doi.org/10.1186/s12875-020-01164-3
- 24. Robinson A, Eccleston C, Annear M, Elliott KE, Andrews S, Stirling C. et al. (2014). Who Knows, Who Cares? Dementia knowledge among nurses, care workers, and family members of people living with dementia. Journal of Palliative Care. 2014; 30(3): 158–65.
  25. Alzhemer's Society of Ontario. Accessed 20 October 2021. Available: <a href="https://alzheimer.ca/on/en/about-us">https://alzheimer.ca/on/en/about-us</a>
- 26. Xia LI., Wenli FANG., Ning SU., Yuanyuan LIU., Shifu XIAO., and Zeping XIAO. Survey in Shanghai communities: the public awareness of and attitude towards dementia. PSYCHOGERIATRICS. 2011; 11: 83–89. doi:10.1111/j.1479-8301.2010.00349.x
- 27. Broche-Pérez Y, Fernández-Fleites Z, González B, Hernández Pérez MA, Salazar-Guerra YI. Knowledge and beliefs about dementia among the general public: A preliminary report on the Cuban population. Neurologia (Engl Ed). 2021;36(5):361-68. doi: 10.1016/j.nrleng.2018.03.012.
- 28. Biswas A., De S., Sarkhel S., Majumder U., Makhal M., Kumar Das SK. (2017). Knowledge about Dementia among Doctor and Nurses in a Medical College Hospital in India. J Alzheimers Parkinsonism Dementia. 2017; 2 (2). Accessed 21 May 2021. Available: <a href="https://scientonline.org/abstract/21561/Knowledge-about-Dementia-among-Doctor-and-Nurses-in-a-Medical-College-Hospital-in-India">https://scientonline.org/abstract/21561/Knowledge-about-Dementia-among-Doctor-and-Nurses-in-a-Medical-College-Hospital-in-India</a>.
- 29. Baghirathan S, Cheston R, Hui R, Chacon A, Shears P, Currie K. A grounded theory analysis of the experiences of carers for people living with dementia from three BAME

- communities: Balancing the need for support against fears of being diminished. Dementia. 2020;19(5):1672-91. doi: 10.1177/1471301218804714.
- 30. Bowman K, Thambisetty M, Kuchel GA, Ferrucci L, Melzer D. Obesity and Longer Term Risks of Dementia in 65–74 Year Olds. Age and Ageing. *2019*; 48:367–373 doi: 10.1093/ageing/afz002.
- 31. Cantón-Habas V, Rich-Ruiz M, Romero-Saldaña M, Carrera-González MDP. Depression as a Risk Factor for Dementia and Alzheimer 's disease. Biomedicines. 2020; 8(11): 457. doi: 10.3390/biomedicines8110457.
- 32. Rockwood K, Wallace LMK, Davis DH. Genetic predisposition and modifiable risks for late-life dementia. Nat Med. 2019;25(9):1331-32. doi: 10.1038/s41591-019-0575-3.
- 33. Xue M, Xu W, Ou YN, Cao XP, Tan MS, Tan L, Yu JT. Diabetes mellitus and risks of cognitive impairment and dementia: A systematic review and meta-analysis of 144 prospective studies. Ageing Res Rev. 2019;55:100944. doi: 10.1016/j.arr.2019.100944.
- 34. Kivipelto M, Ngandu T, Fratiglioni L, Viitanen M, Kåreholt I, Winblad B, Helkala EL, Tuomilehto J, Soininen H, Nissinen A. Obesity and vascular risk factors at midlife and the risk of dementia and Alzheimer disease. Arch Neurol. 2005;62(10):1556-60. doi: 10.1001/archneur.62.10.1556.
- 35. Qiu C, Winblad B, Marengoni A, Klarin I, Fastbom J, Fratiglioni L. Heart failure and risk of dementia and Alzheimer disease: a population-based cohort study. Arch Intern Med. 2006;166(9):1003-8. doi: 10.1001/archinte.166.9.1003.
- 36. Ott A, Slooter AJ, Hofman A, van Harskamp F, Witteman JC, Van Broeckhoven C, van Duijn CM, Breteler MM. Smoking and risk of dementia and Alzheimer's disease in a population-based cohort study: the Rotterdam Study. Lancet. 1998;351(9119):1840-3. doi: 10.1016/s0140-6736(97)07541-7.
- 37. Zheng YB, Shi L, Gong YM, Wang XX, Lu QD, Que JY, et al. Public awareness and knowledge of factors associated with dementia in China. BMC Public Health. 2020; 20:1567 https://doi.org/10.1186/s12889-020-09665-7.
- 38. Rosenberg A, Coley N, Soulier A, Kulmala J, Soininen H, Andrieu S, et al. Experiences of dementia and attitude towards prevention: a qualitative study among older adults participating in a prevention trial. BMC Geriatr. 2020;20(1):99. doi: 10.1186/s12877-020-1493-4.
- 39. Cations M, Radisic G, Crotty M, Laver KE. What does the general public understand about prevention and treatment of dementia? A systematic review of population-based surveys. PLoS One. 2018;13(4):e0196085. doi: 10.1371/journal.pone.0196085.
- 40. Ahlskog JE, Geda YE, Graff-Radford NR, Petersen RC. Physical exercise as a preventive or disease-modifying treatment of dementia and brain aging. Mayo Clin Proc. 2011;86(9):876-84. doi: 10.4065/mcp.2011.0252.
- 41. Kolanowski A, Fick DM, Buettner L. Recreational Activities to Reduce Behavioural Symptoms in Dementia. Geriatr Aging. 2009;12(1):37-42.

- 42. Whear R, Coon JT, Bethel A, Abbott R, Stein K, Garside R. What is the impact of using outdoor spaces such as gardens on the physical and mental well-being of those with dementia? A systematic review of quantitative and qualitative evidence. J Am Med Dir Assoc. 2014;15(10):697-705. doi: 10.1016/j.jamda.2014.05.013.
- 43. Brett L, Traynor V, Stapley P. Effects of Physical Exercise on Health and Well-Being of Individuals Living With a Dementia in Nursing Homes: A Systematic Review. J Am Med Dir Assoc. 2016;17(2):104-16. doi: 10.1016/j.jamda.2015.08.016.
- 44. Swaffer K. Dementia: stigma, language, and dementia-friendly. Dementia. 2014;13(6):709-16. doi: 10.1177/1471301214548143.