

Article

Psychiatrists' Engagement in Research as a Pathway towards the Expansion of Distributed Medical Education (DME): A Regional Analysis across Two Provinces in Atlantic Canada

Samuel Obeng Nkrumah ¹, Raquel da Luz Dias ², Lara Hazelton ², Mandy Esliger ², Peggy Alexiadis Brown ³, Philip G. Tibbo ², Nachiketa Sinha ³, Anthony Njoku ³, Satyanarayana Satyendra ³, Sanjay Siddhartha ², Faisal Rahman ², Hugh Maguire ², Gerald Gray ², Mark Bosma ², Deborah Parker ², Adewale Raji ², Alexandra Manning ², Alexa Bagnell ², Reham Shalaby ⁴ and Vincent Israel Opoku Agyapong ^{1,4,*}

¹ Department of Psychiatry, Nova Scotia Health, Halifax, NS B3H 2E2, Canada; samuel.obengnkrumah@nshealth.ca

² Department of Psychiatry, Faculty of Medicine, Dalhousie University, Halifax, NS B3H 2E2, Canada; raquell.dias@nshealth.ca (R.d.L.D.); lara.hazelton@nshealth.ca (L.H.); mandy.esliger@dal.ca (M.E.); phil.tibbo@nshealth.ca (P.G.T.); sanjay.siddhartha@horizonnb.ca (S.S.); drfaisal.rahman@nshealth.ca (F.R.); hugh.maguire@nshealth.ca (H.M.); gerald.gray@nshealth.ca (G.G.); mark.bosma@nshealth.ca (M.B.); deborah.parker@nshealth.ca (D.P.); adewale.raji@nshealth.ca (A.R.); alexandra.manning@iwk.nshealth.ca (A.M.); alexa.bagnell@iwk.nshealth.ca (A.B.)

³ Department of Psychiatry, Faculty of Medicine, Dalhousie University, Saint John, NB E2L 4L5, Canada; palexiadis@dal.ca (P.A.B.); dr.nachiketa.sinha@horizonnb.ca (N.S.); anthony.njoku@gnb.ca (A.N.); dr.satyendra.satyanarayana@horizonnb.ca (S.S.)

⁴ Department of Psychiatry, Faculty of Dentistry and Medicine, University of Alberta, Edmonton, AB T6G 2H5, Canada; rshalaby@ualberta.ca

* Correspondence: vincent.agyapong@nshealth.ca



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Abstract: In the context of Canadian medical education, Distributed Medical Education (DME) plays a crucial role in addressing healthcare disparities, particularly in rural areas. This study focuses on the Department of Psychiatry at Dalhousie University, analyzing psychiatrists' engagement and willingness to participate in research at DME sites in Nova Scotia (NS) and New Brunswick (NB). The cross-sectional study, encompassing data from an environmental scan, surveyed 60 psychiatrists involved in medical education across seven health zones. Results revealed significant associations between gender, type of graduates, and specialist training. A majority of psychiatrists (68.3%) do not currently engage in mental health or translational research, citing barriers such as a lack of protected time and financial incentives. Notably, participants expressed interest in future research areas, including health services/quality improvement and addiction research. Geriatric psychiatry, predominantly female-dominated, lacked current research activities. The study emphasizes the need to address barriers and promote motivators, both intrinsic and extrinsic, to enhance psychiatrists' research engagement. This strategic approach is essential for fostering active participation in research, thereby contributing to the expansion of DME sites in Atlantic Canada and beyond.

Keywords: psychiatry; distributed medical education; residency training program; academic faculty

1. Introduction

Canadian medical education over the years has centered primarily on the urban faculties of medicine and the tertiary care academic health science centers [1]. This has partly contributed to the disparities between physicians in urban areas compared to rural areas. In 2020, there were 242 physicians per 100,000 population in Canada, and out of these physicians, only 8% were in rural areas, while 92% were in urban areas [2]. Although it is natural to have more physicians in urban areas due to the larger population, urban-centered medical education may contribute to this difference and has not addressed the needs of

the underserved rural and small communities and has failed to attract physicians to these areas [3–5].

When it comes to psychiatry education and the distribution of psychiatrists in urban and rural areas, a similar trend is found. Location of practice information suggests that the national average of psychiatrists per capita in Canada is 13.2/100,000 [6]. However, these figures drastically change depending on the region of the country. For example, in Atlantic Canada, a region also known as the Maritimes region, spanning the provinces of Nova Scotia (NS), New Brunswick (NB), and Prince Edward Island (PEI), encompassing urban centers and remote communities, the disparities in the distribution of psychiatrists per 100,000 population can be very large. The average number of psychiatrists is 14.5/100,000 habitants in Nova Scotia and 6.6/100,000 in New Brunswick [6]. Although Nova Scotia has a slightly higher number of psychiatrists per 100,000 when compared to the national average, these practitioners tend to cluster into larger cities, leaving rural areas underserved [7]. The limited availability of psychiatrists as mentors, supervisors, and educators hampers the opportunities for medical learners, including residents and students, to receive comprehensive and specialized training in these underserved areas. The lack of exposure to diverse clinical experiences and expert guidance may impede the development of future psychiatrists and their ability to meet the mental healthcare needs of the population [8]. Without a substantial influx of new psychiatrists to these locations, the current imbalance of psychiatrists between urban and rural areas across the Maritimes is expected to worsen in the future.

Established in 1868, Dalhousie Medical School in Halifax, NS, has been a pillar of medical education for nearly 150 years. As a pioneer in Distributed Medical Education (DME) (i.e., the practice of training outside urban tertiary care centers) [9] in the Atlantic region, Dalhousie Faculty of Medicine currently spans two campuses: Halifax, NS, and Saint John, NB, with plans for a third in Cape Breton, NS, by 2025. Traditionally, psychiatry residency training occurred solely at the Halifax campus. Recognizing the need for more psychiatrists, the governments of NS and NB advocated for increased psychiatry residency positions through DME, seen as an effective strategy to train, retain, and address healthcare disparities in rural areas [10–12].

However, expanding psychiatry residency training through DME necessitates faculty engagement beyond clinical practice. A fundamental aspect of clinical academic medical education involves participating in research activities [13–15]. Research engagement by clinicians has been linked to improved healthcare processes and performance [16,17] and enhanced patient care and service delivery [18]. Conversely, clinicians bring various benefits to research, including the ability to choose relevant research questions, select research settings, access the clinical field, and apply clinical knowledge to analyze results and report clinically relevant research findings [19], ultimately benefiting patients. Psychiatric trainees exposed to research during their training tend to continue participating in research [20,21]. However, a limitation to expanding the DME through research is the challenge of finding more research supervisors for future residents and fellows.

In this context, psychiatrists' involvement in research could serve as a pathway to expand DME sites, leading to improved psychiatry training, enhanced healthcare services, and greater equity in psychiatry availability in non-urban areas. Encouraging more psychiatrists at DME sites who are passionate about research to assume academic roles can enhance research endeavors and facilitate the availability of research supervisors for future residents and fellows, highlighting the importance of research in medical education. This study aims to analyze psychiatrists' engagement and willingness to be involved in research activities, identify perceived barriers to research engagement, and explore factors that could enhance their participation in research activities, ultimately creating a pathway towards the expansion of DME sites within the Dalhousie University's Department of Psychiatry.

2. Methods

2.1. Study Design

This cross-sectional study is a component of an environmental scan conducted by the DoP at Dalhousie University's Faculty of Medicine DME sites [22]. The environmental scan encompassed a diverse set of variables essential for characterizing the studied population and identifying enablers and barriers to activities that the department deemed crucial for the expansion of DME sites. In this specific study, a focused dataset of research-related variables was analyzed to reveal the extent to which psychiatrists are willing to embrace research as part of their practice, contributing to the potential success of expanding medical education to other regional campuses outside of the central campus located in Halifax, NS, Canada.

2.2. Study Participants

Psychiatrists currently practicing in mental health and addiction services, ranging from small rural communities to medium-sized regional centers in three health zones in NS and four in NB, were invited to participate in the environmental scan. No calculation was conducted to determine the sample size, given the exploratory and descriptive nature of the study. The emphasis was on understanding the various factors influencing psychiatrists' willingness to engage in research activities rather than strictly adhering to a predetermined level of statistical power.

2.3. Study Procedure and Data Collection

An online survey, developed and refined by members of the NS and NB Psychiatry Academic Council, was distributed to all psychiatrists working within the seven administrative health zones in both provinces. The survey (available in Supplementary Material) was powered by the Opinio platform, an electronic survey tool designed for collecting and organizing survey data [23].

To enhance participation, psychiatrists were prompted by their clinical department heads to complete the surveys during monthly psychiatrists' meetings for each zone as a collective activity. During the meeting, each psychiatrist was given time to anonymously complete the survey on their personal devices. For those unable to attend the meeting, a follow-up electronic reminder was sent. Data collection occurred between January and February 2023, and participants were explicitly informed about the voluntary nature of participation, with the collected data intended for research purposes.

2.4. Outcome Measures

The study comprehensively investigated an array of variables (Figure 1), covering sociodemographic characteristics, current engagement, and future interest in professional development, formal research training, and various research activities. Specific research activities examined included presenting at academic grand rounds, participating in the Research Day, and publishing (as lead or co-author) in peer-reviewed journals. Academic grand rounds, a weekly DoP activity, and Research Day, an annual showcase of departmental research, represent integral aspects of academic involvement. Publication in peer-reviewed journals stands as another pertinent research activity of interest. The study also examined the correlation between psychiatrists' current research practices and their willingness to partake in mental health and clinical translational research. Furthermore, the research gathered and analyzed feedback concerning the barriers limiting psychiatrists from participating in research and the perceived benefits of their engagement in research.

Study variables	
Sociodemographic, scope of practice, payment method, medical education training	
<ul style="list-style-type: none"> • Gender • Work-in province • Health authority zone • Work-in mental health services • Scope of practice • Type of medical graduate/specialist training (national or international) 	<ul style="list-style-type: none"> • Primary and secondary specialization • Having academic appointment • Academic rank • Interest in applying for promotion • Wishing an academic appointment • Mode of payment (primary and secondary)
Psychiatrists' current engagement, and future interest in professional development, formal research training, and various research activities	
<ul style="list-style-type: none"> • Having attended professional development training offered by the DoP • Having interest in attending future professional development training offered by the DoP • Having formal research training • Highest level of research training 	<ul style="list-style-type: none"> • Having interest in future formal research training • Having attended the DoP weekly academic ground rounds • Having attended the last DoP Research Day • Having published as lead or co-author in peer-reviewed journals in the past 2 years
Psychiatrists' willingness to start or continue participating in different research activities:	
<ul style="list-style-type: none"> • Present at the DoP weekly academic ground rounds • Attend the next DoP Research Day • Publish (lead, or co-author) in a peer-reviewed journal in the future 	
Barriers hindering psychiatrists to start or continue participating in research activities:	
<ul style="list-style-type: none"> • Lack of protected time • Lack of financial incentives • Lack of training • Lack of interest in research • Cannot identify barriers • Other 	
Potential benefits of psychiatrists participating in research activities	
<ul style="list-style-type: none"> • Could improve the quality of patient care • Contribute to knowledge translation • Creates opportunities for learning by psychiatrists • Creates opportunities for knowledge translation • Increases the profile of the local services • Creates opportunities for learning by members of the department • Inreachment of the interdisciplinary team collaboration • Could help with long-term recruitment and retention • No benefits • Other 	

Figure 1. Sociodemographic and research-related variables of the study.

2.5. Statistical Analysis

Results were analyzed using SPSS Version 28 [24]. Descriptive analysis was performed for psychiatrists' sociodemographic characteristics. The data were summarized and reported against the gender of the participants. Chi-square or Fischer Exact tests with two-tailed significance ($p \leq 0.05$) were used to define the distribution of the categorical variables against the gender variable. A post-hoc analysis was run for the categorical variables with more than two response options when it showed a significant association, using adjusted residuals and a z-score test. The corrected p -value was reported on this occasion (p -value * number of comparisons). Frequency distribution analysis was run for current engagement and future interest in professional development, formal research training, and research activities. Further, a comparative analysis was run to demonstrate areas of practice and barriers hindering participation in mental health or clinical translational research. There was no imputation of missing data, and only complete responses were reported.

2.6. Ethics Considerations

The research protocol [22] has been developed and executed in accordance with the Declaration of Helsinki for research involving human participants and received an exemption from the Dalhousie University Research Ethics Board in accordance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans article 2.5 [25]. Participants were informed about the voluntary and anonymous nature of the study and that data collected would be used for research purposes. Consent was implied upon survey completion and submission.

3. Results

3.1. Sociodemographic Characteristics

The study comprised 60 participants practicing in the DME sites in NS and NB. The data revealed a majority of male participants (40/60, 66.7%), with females representing one-third (18/60, 30%) of the group. Two participants (2/60, 3%) did not disclose their gender identity. Association analysis of sociodemographic variables and gender groups was conducted for those who provided gender information ($n = 58$), as presented in Table 1. A significant association ($p = 0.02$) emerged between gender and the type of graduates,

with the majority of male psychiatrists being International Medical Graduates (IMG) (75%), while most female participants (55.6%) were Canadian Medical Graduates (CMD). A similar association ($p = 0.04$) was observed regarding gender and type of training, where a higher percentage of male psychiatrists completed international specialist training (57.5%), whereas a majority of female psychiatrists (72.2%) completed their specialization training in Canada. Regarding primary specialization, a post-hoc analysis using adjusted residuals revealed that Geriatric Psychiatry was significantly higher among females ($p = 0.03$) compared to male psychiatrists reporting the same specialization.

Table 1. Distribution of participant characteristics, practice-related and payment-related variables against the gender of the participants.

Variables	Female	Male	Total	Chi ² (df)	<i>p</i> Value
(1) Participant characteristics					
Works in-province					
New Brunswick	8 (44.4)	19 (47.5)	27 (46.6)	0.05 (1)	0.81
Nova Scotia	10 (55.6)	21 (52.5)	31 (53.4)		
Works in horizon health zone					
HZ1 NB: Moncton/SE area	2 (11.1)	6 (15.0)	8 (13.8)	*	0.31
HZ2 NB: Fundy Shore and Saint John Area	2 (11.1)	10 (25.0)	12 (20.7)		
HZ3 NB: Fredericton and River Valley Area	4 (22.2)	3 (7.5)	7 (12.1)		
Eastern Zone NS	1 (5.6)	5 (12.5)	6 (10.3)		
Northern Zone NS	4 (22.2)	3 (7.5)	7 (12.1)		
Western Zone NS	5 (27.8)	13 (32.5)	18 (31.0)		
Type of medical graduates					
IMG	8 (44.4)	30 (75.0)	38 (65.5)	5.13 (1)	0.02
CMG	10 (55.6)	10 (25.0)	20 (34.5)		
Type of completed specialist training					
International specialist training	5 (27.8)	23 (57.5)	28 (48.3)	4.39 (1)	0.04
Canadian specialist training	13 (72.2)	17 (42.5)	30 (51.7)		
Having an academic appointment					
Yes	13 (72.2)	29 (72.5)	42 (72.4)	0.00 (1)	0.98
No	5 (27.8)	11 (27.5)	16 (27.6)		
Academic rank					
Adjunct	1 (7.7)	0 (0.0)	1 (2.4)	*	0.34
Assistant Professor	10 (76.9)	23 (79.3)	33 (78.6)		
Associate Professor	0 (0.0)	3 (10.3)	3 (7.1)		
Lecturer	0 (0.0)	1 (3.4)	1 (2.4)		
Unsure	2 (15.4)	2 (6.9)	4 (9.5)		
Interest in applying for promotion to a higher academic rank					
Extremely interested	1 (7.7)	4 (13.8)	5 (11.9)	*	0.74
Moderately interested	3 (23.1)	4 (13.8)	7 (16.7)		
Not at all interested	2 (15.4)	8 (27.6)	10 (23.8)		
Quite interested	3 (23.1)	8 (27.6)	11 (26.2)		
Slightly interested	4 (30.8)	5 (17.2)	9 (21.4)		

Table 1. Cont.

Variables	Female	Male	Total	Chi ² (df)	p Value
Would like an academic appointment					
Definitely	3 (60.0)	4 (36.4)	7 (43.8)	*	0.71
Possibly	0 (0.0)	2 (18.2)	2 (12.5)		
Probably	1 (20.0)	4 (36.4)	5 (31.3)		
Probably Not	1 (20.0)	1 (9.1)	2 (12.5)		
(2) Practice related variables					
Primary specialization or scope of practice					
General adult Psychiatry	8 (44.4)	29 (72.5)	37 (63.8)	*	0.03
Child and adolescent psychiatry	6 (33.3)	9 (22.5)	15 (25.9)		
Geriatric Psychiatry	3 (16.7)	0 (0.0)	3 (5.2)		
Other	1 (5.6)	2 (5.0)	3 (5.2)		
Secondary specialization or scope of practice					
Addiction Psychiatry	0 (0.0)	5 (12.5)	5 (8.6)	*	0.57
Child and Adolescent Psychiatry	1 (5.6)	2 (5.0)	3 (5.2)		
Consultation Liaison Psychiatry	1 (5.6)	1 (2.5)	2 (3.4)		
Emergency Psychiatry	0 (0.0)	4 (10.0)	4 (6.9)		
General Adult Psychiatry	3 (16.7)	6 (15.0)	9 (15.5)		
Geriatric Psychiatry	2 (11.1)	3 (7.5)	5 (8.6)		
I do not have a secondary specialization	6 (33.3)	13 (32.5)	19 (32.8)		
Other	5 (27.8)	6 (15.0)	11 (19.0)		
(3) Payment related variables					
Primary mode of payment for the delivered psychiatric services					
Salary with benefits (e.g., pension)	6 (33.3)	13 (32.5)	19 (32.8)	*	0.08
Fee for service	1 (5.6)	9 (22.5)	10 (17.2)		
Sessional fees	5 (27.8)	3 (7.5)	8 (13.8)		
Alternate Funding Plan	2 (11.1)	11 (27.5)	13 (22.4)		
Other	4 (22.2)	4 (10.0)	8 (13.8)		
Secondary mode of payment for the delivered psychiatric services					
Alternate Funding Plan	0 (0.0)	1 (2.5)	1 (1.7)	*	0.8
Fee for service	6 (33.3)	15 (37.5)	21 (36.2)		
Other, please specify:	1 (5.6)	2 (5.0)	3 (5.2)		
Salary with benefits (e.g., pension)	0 (0.0)	3 (7.5)	3 (5.2)		
Sessional fees	0 (0.0)	2 (5.0)	2 (3.4)		
There is no secondary mode of payment	11 (61.1)	17 (42.5)	28 (48.3)		

DF—Degree of Freedom. * Fisher's Exact test was used.

Figure 2 demonstrates mental health services that study participants work in based on their gender. Outpatient and Emergency services were selected by the majority of male participants as their work-in service ($n = 27$ each), while female participants majorly selected outpatient service as their work-in service ($n = 14$). In comparison, males reported working in inpatient and emergency services significantly more than females ($X^2(1) = 6.91$, $p = 0.01$) and ($X^2(1) = 5.91$, $p = 0.02$), respectively.

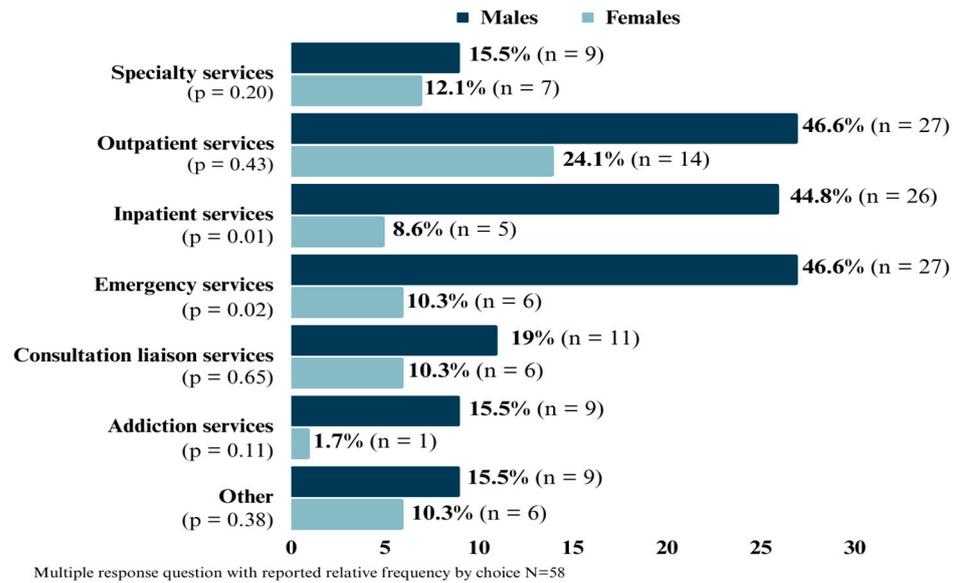


Figure 2. Mental health services the participants work in based on gender.

3.2. Current Participation and Future Interest of Psychiatrists in Research Training and Research Activities

The frequency distribution of current involvement/interest in Continued Professional Development (CPD) and formal research training is demonstrated in Figure 3. Most participants reported having participated in CPD programs organized by the DoP (65.4%), and similar interest was demonstrated in future CPD programs, with more than half of participants either extremely interested or quite interested.

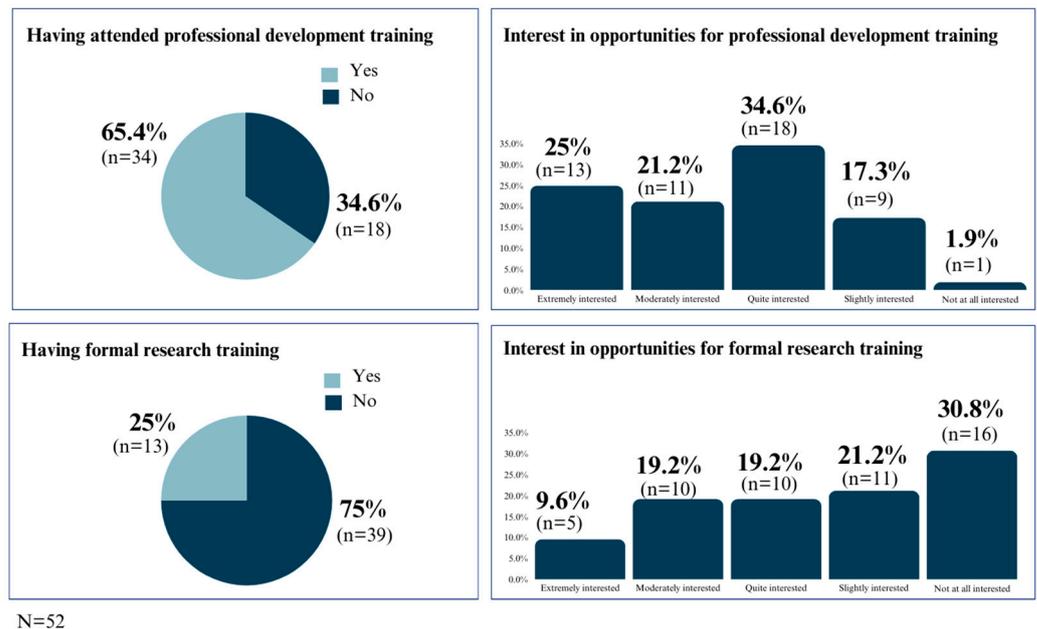
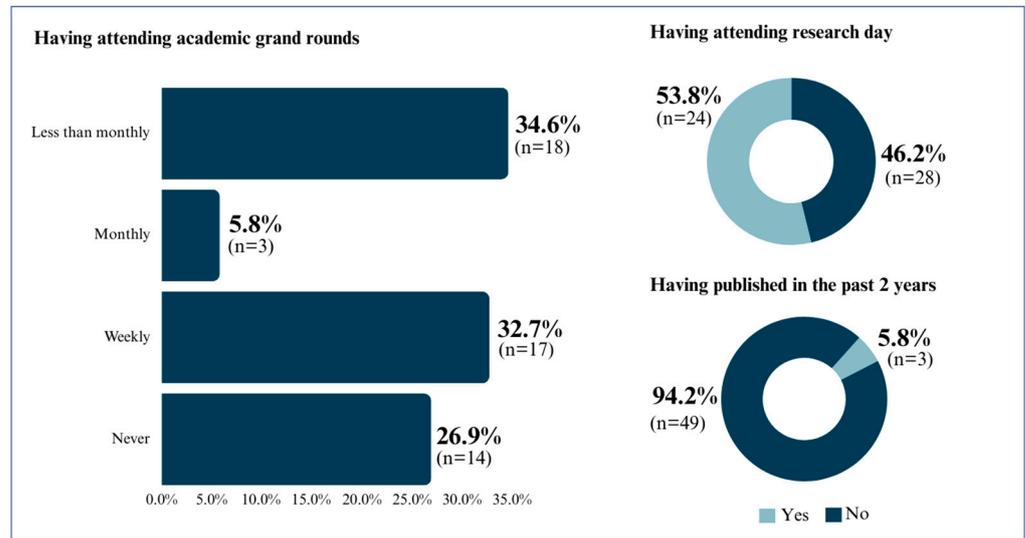


Figure 3. Frequency distribution of current involvement/interest in CPD and formal research training.

One in four participants reported receiving formal research training, and just less than half of them reported receiving a Master’s degree as their highest level of research qualification (6/13, 46.2%). However, about one-third of the participants were not interested in exploring opportunities for formal research training.

The frequency of distribution of current involvement/interest in research activities is demonstrated in Figure 4. Most participants reported attending the weekly academic grand

rounds on less than a monthly basis (34.6%), followed by attending every week (32.7%). More than half of psychiatrists had not attended the DoP Research Day, and about a third were possibly willing to attend the next event. Only three participants reported having published in a peer-reviewed journal in the last 2 years.

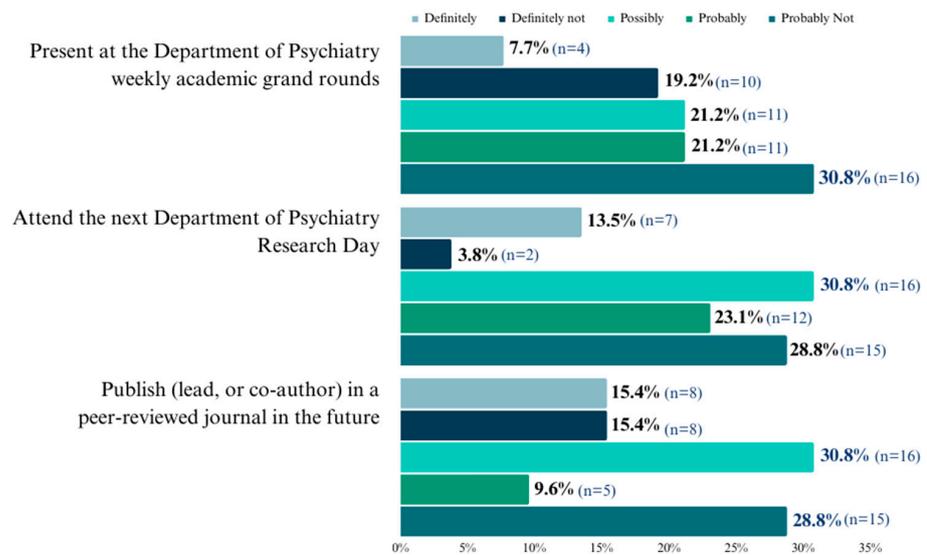


N=52

Figure 4. Frequency distribution of current involvement/interest in research activities.

3.3. Psychiatrists' Willingness to Participate in Research Activities

Figure 5 demonstrates the frequency distribution of psychiatrists' willingness to participate in three core research activities. Half of the psychiatrists expressed reluctance (probably not and definitely not) to present at academic grand rounds. Only seven psychiatrists affirmed their definite attendance at the upcoming Research Day, while the majority indicated a possible attendance. Regarding the willingness to publish as a lead or co-author in peer-reviewed journals, 44.2% (23/52) exhibited a negative response (definitely not or probably not).



N=52

Figure 5. Frequency distribution of psychiatrists' willingness to participate in research activities.

Figure 6 illustrates the percentage distribution of the participants' current research areas against their willingness to engage in different mental health and translational research domains. The figure indicates a consistently higher willingness across all research domains compared to the current practice. Notably, while the majority (68.3%) of participants currently do not conduct mental health or clinical translational research, only a third express an unwillingness to participate, showing a significant difference ($X^2(1) = 14.7, p < 0.001$).

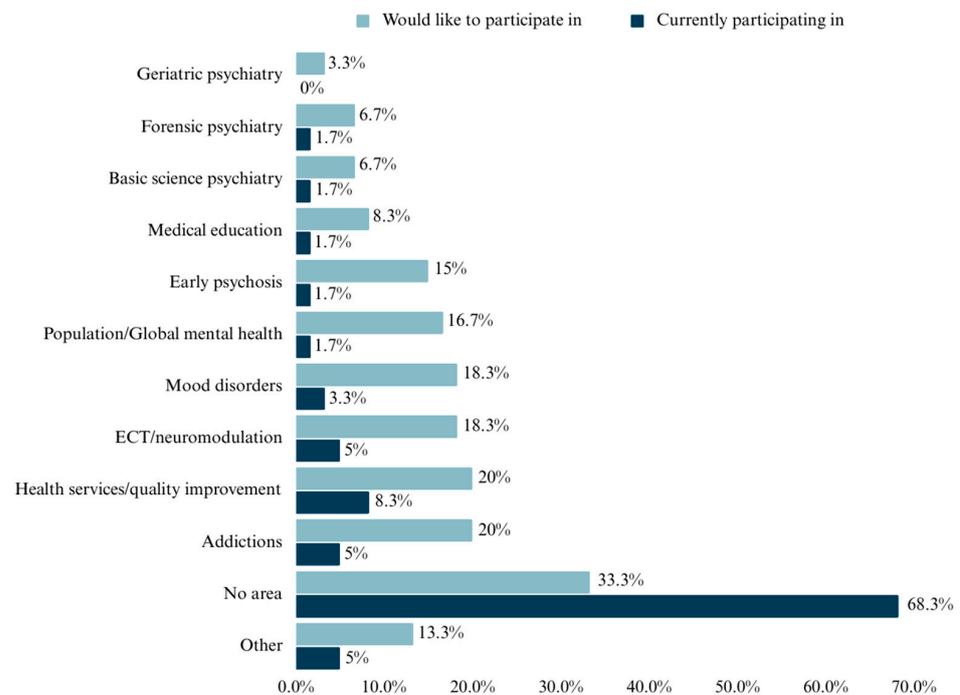
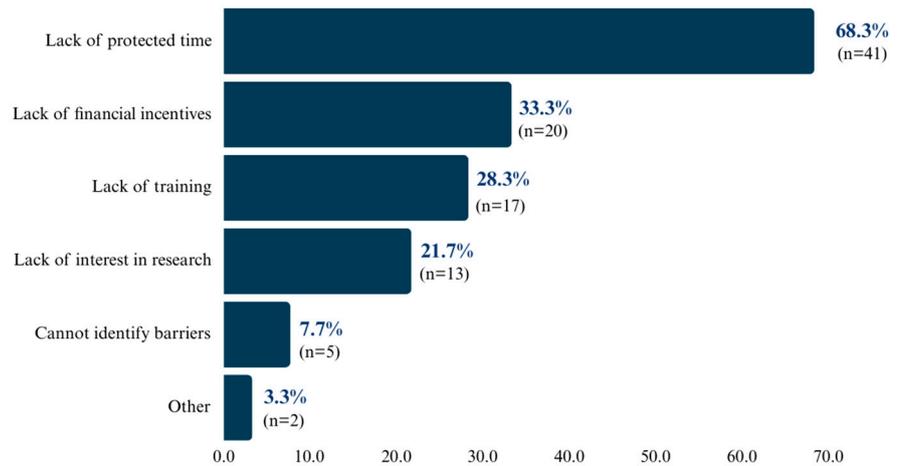


Figure 6. Current area of research practice versus willingness to participate in various mental health and clinical translational research.

Two research areas were most frequently chosen by participants for future involvement: health services research or quality improvement initiatives and addiction research (20% each). These were followed by mood disorders research and ECT/rTMS/Neuromodulation research (18.3% each). In a comparative analysis, significant differences were observed between current practice and willingness to participate in research in the following specific areas: Addictions ($X^2(1) = 6.17, p = 0.01$); early psychosis ($X^2(1) = 6.98, p < 0.01$); ECT/rTMS/neuromodulation ($X^2(1) = 5.18, p = 0.02$); mood disorders ($X^2(1) = 6.99, p < 0.01$); and population/global mental health ($X^2(1) = 8.11, p < 0.01$). In these research areas, the percentage of those willing to participate exceeded those engaged in current practice.

3.4. Barriers to Engaging in Research Activities

The percentage distribution results of the psychiatrists' responses on the barriers hindering them from participating in mental health or clinical translational research is demonstrated in Figure 7. The top three barriers reported by psychiatrists were the lack of protected time, lack of adequate financial incentives, and lack of training. There was no statistically significant difference between all reported barriers ($X^2(5) = 2.53, p = 0.77$).



Multiple response question with reported relative frequency by choice (N=60)

Figure 7. Participant feedback regarding the barriers hindering them from participating in mental health or clinical translational research.

3.5. Potential Benefits of Psychiatrists Participating in Research Activities

Figure 8 illustrates multiple-response feedback from the study participants regarding the benefits of psychiatrists participating in mental health or clinical translational research. The figure shows that overall, there was more than 50% agreement among the respondents that there were some reported benefits in such practice. The top selected benefits were related to the potential to improve the quality of patient care, contribute to knowledge translation, and create opportunities for learning by psychiatrists. The no-benefits option was only selected by 3/60 (5%) of the study participants.

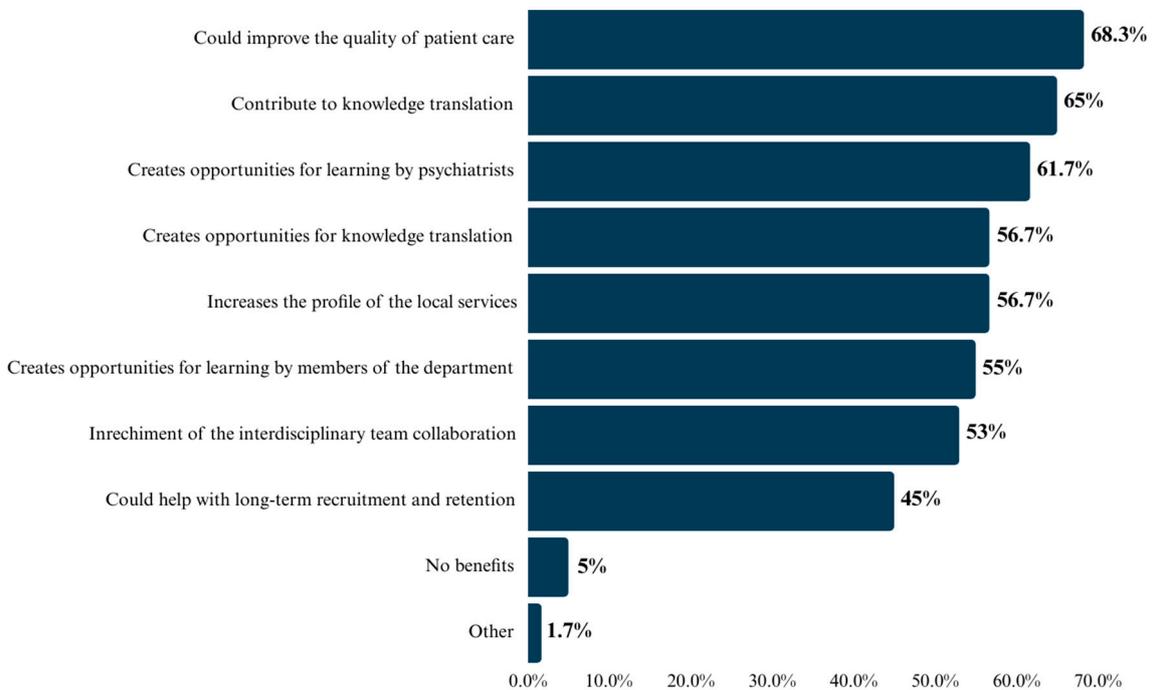


Figure 8. Adjusted relative frequency of reported benefits for psychiatrists engaging in mental health or clinical translational research.

4. Discussion

The results of this environmental scan shed light on psychiatrists' current engagement, willingness to be involved, and perceived barriers to research engagement, and explored factors associated with their participation in research activities within Dalhousie University's Department of Psychiatry. While the environmental scan was quite comprehensive, few studies contain variables that allow investigators to determine the cause of the pattern we identified.

We observed a significant correlation between gender and graduate type, specialization field and work-in-service. A majority of male participants (75%) completed their medical education outside Canada, while a significant portion of female participants (55.6%) graduated within Canada. Similar results were found in regard to specialist training, again, with the majority of females completing their specialist training in the country. These findings align with a national trend identified through the Canadian Post-M.D. Education Registry [26]. The data from the registry indicates a shift, showing an increase in the percentage of female CMGs from 41% in 1989–1993 to 52% in 2003–2007. During the same period, the percentage of female IMGs rose from 28% to 42%. This trend is anticipated to persist, given that women constituted nearly 58% of first-year medical students in Canadian medical schools in 2009–2010 [27]. While recent CMG graduates now have more women than men, a gender gap remains among IMGs. Although the literature is not clear about the effect of gender on the type of medical education, many factors may influence physicians' decision to practice abroad. The major drivers of physicians' migration are related to macro-level (remuneration and security problems) and meso-level factors (career prospects, good working environment and job satisfaction), as well as personal characteristics (number of children, marital status, and related to how males and females perceive their job) [28,29].

The gender of psychiatrists was also linked to their primary specialization, notably in geriatric psychiatry, which showed a significant female predominance ($p = 0.03$). A study by Khan et al. (2021) [30] highlighted a shift in gender distribution among geriatric psychiatry fellows from 2007–2008 to 2019–2020, with male fellows decreasing by 11.5% and female fellows increasing by the same percentage. Factors contributing to the rise of women in geriatric psychiatry include career satisfaction, a desire for work-life balance, improved career opportunities, and accessible loan repayment programs [31]. Notably, geriatric psychiatry was the sole field without current research, even though some participants (3.3%) expressed interest. The absence of research in geriatric psychiatry revealed in our study raises two concerns. Firstly, it may indicate a gender gap in research engagement, with females potentially feeling less competent or encouraged to participate in research activities [32]. Secondly, given the projected growth of the 65+ population to about 10 million individuals by 2030 [33], the lack of research incentives in this field could have future consequences for the mental health needs of the elderly population, potentially leading to unmet needs. While our results have only involved two female geriatric psychiatrists, their perspectives are still valuable within the local context, highlighting a potential area of improvement. Generalizations may be limited, but the insights provided by our study can still offer valuable starting points for further investigation and discussion within the medical community.

Gender was also associated with work-in-service, and the results showed significantly more male psychiatrists working in inpatient and Emergency services compared to female psychiatrists. Similar gender differences are not found in other studies, where female psychiatrists usually dominated both inpatient and outpatient [32].

The study revealed interesting findings regarding psychiatrists' current involvement and interest in CPD and formal research training. A significant majority (75%) of psychiatrists lacked formal research training, and a notable portion (30.8%) showed no interest in exploring future opportunities for such training. In contrast, a substantial 80.8% expressed a high level of interest in future CPD training opportunities provided by the department, which are typically shorter in duration compared to formal training programs and offered free of charge. Despite the increasing significance of evidence-based medical practice and

the engagement of clinicians in research, the formal training pathway for these professionals lacks appeal [34]. This may be attributed to the prolonged duration of Masters and Ph.D. programs, combined with diminished financial support and delayed income earning [35]. The financial dimension adds substantial weight, particularly as clinical faculty members typically earn more than their research-focused counterparts. This discrepancy arises from academic centers compensating clinician-scientists less for the time devoted to research commitments [36,37]. The lack of adequately trained clinicians in research poses a significant obstacle to future research development [38]. This, in turn, becomes a crucial impediment to the expansion of psychiatry education in DME sites.

Regarding psychiatrists' current involvement and interest in research activities (i.e., events organized by the DoP and publications in the past two years), most participants reported attending short events, such as the weekly academic grand rounds lasting 1 h, which can be virtually attended. However, for activities requiring more time, like presenting at the weekly academic grand rounds, about one in two psychiatrists are not willing to present. Similarly, for the Department's Research Day, more than half of the psychiatrists did not attend the event last year, and only about 1 in 10 are willing to attend the next event. These findings emphasize a general lack of interest in research activities promoted by the department among participating psychiatrists in the study. The reluctance to be engaged in training and research activities that require more time commitment is reinforced by the top one barrier reported by the psychiatrists participating in the study. Lack of protected time appears to be linked to the time commitment required for certain activities.

While there's a consistently higher willingness across all research domains compared to current practice, the majority (68.3%) of participants currently do not engage in research in any area. The gap between psychiatrists' willingness to participate in mental health or clinical translational research and their actual involvement may be attributed to their lack of formal research training, inadequate protected time, and financial incentives, which were reported as the top two barriers hindering their participation in such activities. Recent evidence suggests clinicians are more motivated to engage in research when benefits are emphasized, relevant topics are selected, there's reimbursement for research tasks, and technical support is provided [39]. In our study, perceived clinical relevance appears to be a crucial factor influencing psychiatrists' interest in research areas, as health service/quality improvement and addiction research garnered high reported interest.

Given the participants' limited formal research training and low engagement in mental health or clinical translational research, it is unsurprising that only a small percentage (5.8%) reported journal publications in the last two years. Additionally, almost half of the participants expressed a negative response regarding their willingness to publish as lead or co-author in the future. Existing literature highlights barriers to scientific publications, including a lack of skill in scientific writing [40] and the competing demands of patient care, administrative work, and teaching responsibilities [41,42]. Lack of time is consistently identified as a major barrier to publication, aligning with the findings of our study [43].

In addition to the reported lack of protected time for research and insufficient financial incentives, the third and fourth most frequently reported barriers were inadequate research training and a lack of interest in research, consistent with findings in other studies [32,44–47]. It is well-established in the literature that research productivity is closely tied to having protected time and opportunities for research career development [48,49].

Analyzing the reported barriers from the perspective of motivators [50], the evidence indicated that a significant portion of our study participants would be more involved in research if we addressed protected time for research and financial incentives. These factors serve as extrinsic motivators, with external elements driving goal execution. The prominence of these external motivators aligns with findings from previous studies [51–53]. However, intrinsic motivators, such as mastery, purpose, and autonomy, are equally crucial and, at times, more powerful than extrinsic factors like salary, recognition, and rewards [50,51]. Notably, in our study, the high willingness of psychiatrists to engage in research and the perceived benefits of engaging in research (e.g., enhanced patient care,

knowledge translation, and learning opportunities for psychiatrists) might indicate the presence of intrinsic motivational factors. Thus, if both extrinsic and intrinsic motivation are sufficiently high to drive psychiatrists toward research, a virtuous cycle can be initiated, as research engagement becomes a source of job satisfaction, professional confidence, and encouragement to continue research [32,49]. This marks a positive stride in the direction of the research engagement process. Finally, it is crucial to emphasize that the active involvement of psychiatrists in research is vital for inspiring psychiatry residents. There is evidence indicating that motivation for research activities may arise even before residency training and that early incorporation of research as part of psychiatry training is essential to generating early interest in research [54]. Unfortunately, a considerable number of medical students face discouragement in their research-focused career plans due to inadequate counseling or the impact of role models [46].

The strengths of this study are its comprehensive approach, diverse regional representativeness, meaningful data selection and rigorous analysis. However, acknowledging limitations is crucial. Voluntary participation introduces potential selection bias, impacting the representation of perspectives. Self-reported data is susceptible to biases like social desirability or recall bias. While the diverse sample enriches insights, findings may not be entirely generalizable to all Maritimes Province psychiatrists or other regions due to healthcare system and resource variations. In addition, the sampling method and participant characteristics may limit the generalizability of our study results. Finally, the presence of missing data might have compromised the robustness and reliability of our findings.

5. Conclusions

The study brings attention to gender differences in medical graduate education and specialization, noting a predominance of female CMGs and male IMGs. Gender disparities extend to geriatric psychiatry, where female psychiatrists are significantly predominant. Despite the global need for research on this aging population, limited research has been undertaken in this specific area. This underscores the necessity for additional incentives to encourage female psychiatrists' engagement in this field. The study also underscores a significant gap in psychiatrists' engagement in research activities, with a substantial portion lacking formal research training but with a high interest in continued professional development. Limited protected time and lack of financial incentives highlight systemic challenges that need attention. Notably, the study reveals potential intrinsic motivation factors, as seen in the high willingness of psychiatrists to participate in various areas of psychiatry research. Addressing the identified barriers and fostering both extrinsic and intrinsic motivators is crucial for advancing psychiatrists' involvement in research, ultimately serving as a pivotal step toward a successful expansion of DME sites in Atlantic Canada. The study results provide insights that can inform governmental, health, and academic institutions in crafting strategies and policies to address barriers to psychiatrists' engagement in research. This includes considerations for resource allocation and incentive structures. It emphasizes the importance of fostering a culture that acknowledges and supports psychiatrists' interest in research to create a pathway to sustained engagement at DME sites.

Supplementary Materials: The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/ime3010006/s1>, the online survey distributed to all psychiatrists working within the seven administrative health zones in both provinces.

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