Changing Roles and Responsibilities of Dietitians from Diverse Settings During the First Three Waves of the COVID-19 Pandemic in Nova Scotia

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ABSTRACT

Purpose: To explore the impact of the COVID-19 pandemic on Nova Scotian dietitian's roles, responsibilities, and professional development needs.

Methods: We conducted a province-wide, online, exploratory survey with registered dietitians during the initial waves of the COVID-19 pandemic. Differences were explored with descriptive statistics by work sector (hospital/acute care; primary health/community or public health (PH); long-term care [LTC]; other [e.g., private practice, retail]).

Results: Dietitians ($n = 122$) reported being most frequently challenged by stress and anxiety, changing work expectations, and rapidly evolving safety protocols during the pandemic. Those working in PH, primary health, and LTC reported experiencing more work responsibilities, more change, and perceived less employer support than dietitians in other sectors. Despite the identified challenges, most participants (70.7%) felt their education and training were sufficient to take on these new work roles. Primary and PH dietitians, however, more frequently perceived their skill sets to be under-utilized than other sectors. Key learnings from practice identified as being important for dietetic education included qualities such as resilience, problem-solving, flexibility, and self-care.

Conclusion: These findings will be of interest to health administrators, professional bodies, and academic institutions to inform strategies for strengthening dietetic practice, building resilience, and preparing for future emergencies.

Key words: dietitian, practice, pandemic, healthcare, education, emergency.

(Can J Diet Pract Res. 2024;85:12–19)
(DOI: 10.3148/cjdpr-2023-030)
Published at dcjournal.ca on 20 February 2024

RÉSUMÉ

Objectif. Explorer l'impact de la pandémie de COVID-19 sur les rôles, responsabilités et besoins de développement professionnel des diététistes de la Nouvelle-Écosse.

Méthodes. Pendant les premières vagues de la pandémie de COVID-19, nous avons mené à l'échelle de la province une enquête préparatoire en ligne auprès de diététistes. Les différences ont été explorées à l'aide de statistiques descriptives par milieu de travail (hôpital/soins de courte durée; santé primaire/communauté ou santé publique [SP]; soins de longue durée [SLD]; autres [ex. pratique privée, détail]).

Résultats. Les diététistes (n = 122) ont déclaré avoir été le plus souvent confrontés au stress et à l'anxiété, au changement des attentes professionnelles et à l'évolution rapide des protocoles de sécurité pendant la pandémie. Les personnes qui travaillaient en SP, en santé primaire et en SLD ont rapporté avoir plus de responsabilités professionnelles, subir plus de changements et percevoir moins de soutien de la part de l'employeur que les diététistes des autres milieux. Malgré les défis identifiés, la plupart des participants (70,7 %) étaient d'avis que leur éducation et leur formation étaient suffisantes pour assumer ces nouveaux rôles. Toutefois, les diététistes des milieux de la santé primaire et de la SP percevaient plus souvent que leurs compétences étaient sous-utilisées, par rapport aux diététistes des autres secteurs. Les principaux enseignements tirés de la pratique et jugés importants pour la formation en diététique comprenaient des qualités telles que la résilience, la résolution de problèmes, la flexibilité et l'autoprise en charge de la santé.

Conclusions. Ces résultats intéresseront les administrateurs de la santé, les organismes professionnels et les établissements de formation universitaire, car ils permettront d'élaborer des stratégies pour renforcer la pratique de la diététique, développer la résilience et se préparer aux futures urgences.

Mots-clés : diététiste, pratique, pandémie, soins de santé, éducation, urgence.

(Rev can prat rech diétét. 2024;85:12–19)
(DOI: 10.3148/cjdpr-2023-030)
Publié au dcjournal.ca le 20 février 2024

INTRODUCTION

The COVID-19 pandemic has put pressure on healthcare systems and workers in Canada and around the world [1]. As countries and governments adapt to the evolving pandemic and its impact on healthcare, it is important to understand the experiences of healthcare workers (HCWs) to strengthen and support their needs, training, and resilience. A recent scoping review identified a lack of studies on the COVID-19 experience of HCW other than nurses and doctors, as well as HCW in non-hospital settings [2]. Registered dietitians work in diverse settings within acute healthcare (AHC), as well as in primary healthcare (PHC), public health (PH), community settings, industry, private practice, and related fields. In the early phases of the pandemic, the emphasis was on clinical nutrition research to optimize nutrition care for acutely ill and ventilated COVID-19 patients [3–5]. The association

between COVID-19 severity and co-morbidities including cardiovascular disease, diabetes, and other chronic illnesses has also been well established [6, 7].

Within Canada, Nova Scotia has among the highest rates of food insecurity [8] and often accompanying chronic diseases, such as type 2 diabetes, cardiovascular disease, respiratory disease, and arthritis [9]. Nova Scotia's Indigenous peoples, African Nova Scotians, and large population of older persons are among the most affected by these conditions [9]. The COVID-19 pandemic has disproportionately challenged the social, physical, and emotional well-being of these vulnerable groups [10]. Dietitians are well-positioned to support communities in addressing food insecurity, planning for emergency preparedness, and preventing and managing acute and chronic health conditions [11]. While the impact of the pandemic on the health sector has been significant, little is known about how it has affected dietetic work and dietitians [12–14]. In this study, we aimed to understand the impact of the COVID-19 pandemic on Nova Scotian dietitians' roles, responsibilities, and education and professional development (PD) needs.

METHODS

This exploratory mixed methods study was designed in two phases consisting of an online survey (phase one) followed by in-depth interviews and focus groups (phase two). Here, we report findings from the online survey, which were also used to inform semi-structured qualitative questions for phase two. All data were collected in 2021 following ethics approval from the Research Ethics Boards of St. Francis Xavier University (#25309) and Mount Saint Vincent University (#220–254). The voluntary nature of participation and confidentiality of responses were explained to participants in an online form prior to data collection. Acceptance of the online invitation was considered informed consent.

A 39-item web-based questionnaire was developed by the research team and pre-tested by ten Nova Scotia dietitians from a variety of work sectors. Minor changes were made to improve readability, face validity, and relevance of response items to diverse work roles and contexts. The survey (Supplemental File 1[1]) included multiple choice, Likert scale, and open-ended questions to capture: participant demographics; work sectors; pre and during-pandemic work roles and settings; and opinions on how the pandemic impacted a variety of factors related to work experiences and dietetic training. The survey was administered online via Qualtrics© (Qualtrics, Provo, UT, USA, 2020). An invitation to participate in the survey, as well as two reminders, was distributed electronically through the Nova Scotia Dietetic Association (NSDA) member listserv, which included approximately 450 dietitians at the time of the study. The study was also advertised on nutrition-related social media, including a NS dietitian online support group. Responses were collected anonymously. Inclusion criteria were dietetic registration with NSDA, employed as a dietitian in NS at some point between March 1, 2020 and present, and active in a workplace (not on leave) at some point between March 1, 2020 and present. Data collection took place from June to August, 2021. Nova Scotia Public Health has defined the following COVID-19 waves as: Wave 1 (March 1, 2020–Sept 30, 2020), Wave 2 (Oct 1, 2020–Mar 31, 2021), and Wave 3 (Apr 1–July 31, 2021) [15].

All statistical analyses were performed using StataSE 14.2 (StataCorp, 2015; College Station, TX, USA). Descriptive statistics were conducted to describe the respondents. Data were categorized and analyzed according to work sector as follows: (1) hospital or acute care; (2) primary health, community or PH; (3) long-term care (LTC); and (4) other (e.g., private practice, retail, industry, research). Due to the limited sample size, the PH sector was combined with PHC and community nutrition for all analyses, except for frequency counts. Differences between work sectors for categorical variables were analyzed using Kruskal–Wallis one-way analysis of variance. Fisher's exact test was used when cell counts were less than ten. For items allowing multiple answers, frequency counts were presented by work sectors and ranked in ascending order. Statistical significance was determined at the 95% confidence level ($\alpha = 0.05$). Open-ended responses were thematically coded and summarized by work sector, including representative quotations.

RESULTS

Participant characteristics

A total of 128 dietitians responded to the survey, and six blank responses were excluded resulting in 122 partial or complete responses. Participant ($n = 122$) characteristics are summarized by work sector in Table 1. Most survey respondents reported working in the Central Health Zone (52.1%, $n = 63$), working in a large urban centre (46.6%, $n = 61$), and being female (96.6%, $n = 115$). Over half of respondents (54.6%, $n = 65$) reported working in a facility that was prepared to admit COVID-19 patients but only 13.1% ($n = 16$) said they were assigned to work in a COVID-19 unit. Dietitians working in primary/PH and "other" work sector had a higher proportion of graduate level degrees ($P < 0.001$).

Evolving work contracts, settings, and roles

Prior to the COVID-19 pandemic, work contract status of survey respondents was 76.3% full-time ($n = 90$), 18.6% part-time ($n = 22$), 1.7% other ($n = 2$) and 3.4% on-leave or not working ($n = 4$). Dietitians in the "other" work sector reported more part-time work (28.0%, $n = 7$) and less full-time (64.0%, $n = 16$) work than other work sectors ($P < 0.001$) before the pandemic. As a result of the pandemic, 38.5% ($n = 50$)

[1]Supplementary data are available with the article at https://dcjournal.ca/doi/suppl/10.3148/cjdpr-2023-030.

Table 1. Survey participant characteristics by work sector ($n = 122$).

	All ($n = 122$)	Hospital/Acute Care ($n = 42$)	Primary/Public health ($n = 29$)	Long-term care ($n = 24$)	Other ($n = 26$)	*P*-value
Age						
20–39 years	56 (45.9)	18 (42.9)	16 (55.2)	10 (41.7)	12 (46.2)	0.013
40–59 years	55 (45.1)	20 (47.6)	13 (44.8)	14 (58.3)	7 (26.9)	
≥60 years	11 (9.0)	4 (9.5)	0	0	7 (26.9)	
Sex						
Female	115 (96.6)	39 (97.5)	28 (100)	23 (95.8)	24 (92.3)	0.508
Male	2 (1.7)	0	0	1 (4.2)	1 (3.9)	
Undisclosed	2 (1.7)	1 (2.5)	0	0	1 (3.9)	
Health zone of work						
Central	63 (52.1)	19 (45.2)	16 (55.2)	10 (41.7)	18 (69.2)	0.514
Eastern	20 (16.5)	10 (23.8)	5 (17.2)	3 (12.5)	2 (7.7)	
Northern	16 (13.1)	4 (9.5)	4 (13.8)	4 (16.7)	3 (11.5)	
Western	23 (19.0)	9 (21.4)	4 (13.8)	7 (29.2)	3 (11.5)	
Highest education achieved						
Bachelors	78 (66.1)	34 (81.0)	11 (39.3)	19 (82.6)	14 (53.9)	<0.001
Masters	35 (29.6)	8 (19.0)	16 (57.1)	4 (17.4)	7 (26.9)	
Doctoral	6 (5.1)	0	1 (3.6)	0	5 (19.2)	
Years worked as dietitian						
Full-time, years	14.7 (10.7)	15.6 (10.2)	11.4 (6.6)	13.7 (10.7)	18.1 (14.5)	0.4726
Part-time, years	6.0 (6.4)	4.0 (2.3)	5.8 (5.7)	9.9 (9.6)	3.5 (2.9)	0.3937
Casual, years	1.6 (1.4)	1.9 (0.9)	1.0 (0)	1.7 (2.9)	1.3 (1.5)	0.5869
Community size of work*						
Large urban	61 (46.6)	19 (40)	16 (47)	10 (40)	16 (59)	–
Medium	20 (15.3)	12 (26)	4 (12)	2 (8)	2 (7)	
Small	43 (32.8)	14 (30)	11 (32)	11 (44)	8 (30)	
Rural	7 (5.3)	2 (4)	3 (9)	2 (8)	1 (4)	
Number of work sectors employed in over career						
Mean (SD)	2.6 (1.7)	2.4 (1.5)	2.8 (2.0)	2.1 (1.4)	3.0 (1.8)	0.237

Note: Data represent counts (%) unless otherwise specified.
*Respondents may provide multiple answers.

reported a change in their work contract status and/or status. Of these responses, 13.8% ($n = 18$) received a financial incentive, 7.7% (n = 10) had a contract terminated (primarily from "other" sector), 6.2% ($n = 8$) had increased work hours, 3.8% ($n = 5$) had reduced work hours, and 2.3% ($n = 3$, each) had a contract extended or received a promotion. Overall, 59.5% ($n = 69$) of respondents felt they had added work responsibilities, and this was perceived to be higher in the primary/PH sector (77.8%, $n = 21$) and the LTC sector (62.5%, $n = 15$) compared to other sectors ($P < 0.006$). A change in work setting was reported by 24.4% ($n = 28$) of respondents and was more frequent in the "primary/PH" sector (53.9%, $n = 14$) and "other" sector (28.0%, $n = 7$) compared to remaining sectors ($P < 0.001$). Dietitians in PHC were most frequently redeployed to AHC settings or PH, whereas PH dietitians who changed roles were all redeployed within PH. Dietitians in the "other" sector transitioned to private practice, virtual settings, or a new setting within their current work. In most settings, redeployments were mandatory (71.4%, $n = 20$). Changes in work roles are summarized by work sector in Table 2. Most (54.8%, $n = 23$) respondents reported feeling very or somewhat prepared for their new work role(s), 19.0% ($n = 8$) had neutral feelings, and 26.2% ($n = 11$) felt somewhat or very unprepared, with no differences observed by work sector. Overall, 70.7% ($n = 29$) of dietitians felt their education and training were sufficient to take on these new work roles. Most work role changes were also mandatory (80.0%, $n = 47$).

Table 2. New work roles of Nova Scotian dietitians during the COVID-19 pandemic.

	All (n = 122)	Hospital/Acute Care (*n* = 42)	Primary/ Public health (*n* = 29)	Long-term care (*n* = 24)	Other (*n* = 26)	*P*-value
Change in work roles						
Yes	59 (51.3)	12 (29.3)	24 (88.9)	13 (56.5)	11 (44.0)	‹0.001
No	56 (48.7)	29 (70.7	3 (11.1)	10 (43.5)	14 (56.0)	
Voluntary change	12 (20.3)	4 (33.3)	2 (8.3)	3 (23.0)	3 (27.3)	
Mandatory change	47 (80)	8 (66.7)	22 (91.7)	10 (76.9)	8 (72.7)	0.252

Frequency of affirmative responses to new work roles*	Hospital/Acute Care	Primary health	Public health	Long-term care	Other
Administration	3	6	5	5	3
Communications	2	2	5	5	1
Educational/training	8	3	1	8	2
Food provision	0	1	0	4	0
Health promotion	0	1	0	0	0
Management	2	1	1	3	0
Nutrition care-outpatient	2	0	0	0	0
Nutrition care-inpatient	8	2	0	1	0
Procurement	2	1	1	6	0
COVID protocol development/ implementation	5	0	1	2	0
Public health-general	0	1	3	0	0
Public health-COVID	0	0	14	2	2
Resource development	7	4	1	1	3
Sales and marketing	0	1	0	0	1
Non-dietetic (e.g. stocking shelves)	0	0	0	1	3
Telehealth or virtual care	0	2	0	0	2

Note: Data represent counts (%) unless otherwise specified. *Respondents may provide multiple answers.

COVID-19 challenges

The most frequently reported challenges faced by dietitians during the pandemic in ascending order were additional stress and anxiety; changing work expectations; rapidly evolving safety protocols; isolation from co-workers; increased workload; transition to working at home; and physical distancing impacting care. Frequency counts of challenges varied considerably by work sector, as summarized in Table 3. Dietitians working in PH perceived increased workload/hours as a top challenge. Rapidly evolving safety protocols were a top concern in LTC and AHC. Transition to work from home was the most frequently cited challenge in the "other" work sector.

Professional development needs

The most frequently identified PD needs of dietitians during the pandemic in ascending order were virtual facilitation skills; emergency preparedness; infection prevention and control; information technology (IT); virtual care training (for clinicians); communications; IT virtual care training (for clients); and training/education. Frequency counts of PD needs varied considerably by work sector, as summarized in Table 4. AHC dietitians' top PD needs were in critical care, nutrition support, and virtual care. LTC dietitians most frequently desired PD in infection prevention and control and emergency preparedness. Primary care and "other" dietitians' top PD need was in virtual facilitation skills.

Employer supports

Most respondents (75.6%, $n = 87$) felt very or somewhat supported by their employer during the pandemic, while 9.6% ($n = 11$) held a neutral position and 14.8% ($n = 17$) felt somewhat unsupported. Feeling somewhat unsupported was higher in PH (41.7%, $n = 5$) and LTC (21.7%; $n = 5$) sectors compared to other sectors ($P = 0.033$). The most frequently identified employer supports of dietitians during the pandemic in ascending order were team check-ins (76); adequate information provided (68); timely information provided (60); adequate consultation (42); individual check-ins (41); mental health supports (35); and sufficient PD (33).

Table 3. Top work-related challenges reported by Nova Scotian dietitians during the COVID-19 ($n = 122$).

Frequency of affirmative responses to challenges faced during pandemic*	All ($n = 645$)	Hospital/Acute Care ($n = 228$)	Primary health ($n = 87$)	Public health ($n = 89$)	Long-term care ($n = 138$)	Other ($n = 103$)
Additional stress/anxiety	96 (15.1)	34 (14.9)	13 (14.9)	13 (14.6)	20 (14.5)	17 (6.5)
Changing work expectations	84 (13.2)	25 (11.0)	14 (16.1)	12 (13.5)	19 (13.8)	15 (14.6)
Rapidly evolving safety protocols	76 (11.9)	34 (14.9)	9 (10.3)	4 (4.5)	22 (15.9)	8 (7.8)
Isolation from co-workers	59 (9.3)	27 (11.8)	7 (8.0)	9 (10.1)	8 (5.8)	9 (8.7)
Increased workload/hours	53 (8.3)	18 (7.9)	5 (5.7)	13 (14.6)	13 (9.4)	5 (4.9)
Transition to work from home	53 (8.3)	9 (3.9)	8 (9.2)	12 (13.5)	6 (4.3)	19 (18.4)
Physical distancing impacting care	51 (8.0)	21 (9.2)	9 (10.3)	0	17 (12.3)	4 (3.9)
Insufficient/contradictory safety protocols	43 (6.8)	17 (7.5)	7 (8.0)	2 (2.2)	15 (10.9)	3 (2.9)
Changes in home life	41 (6.4)	13 (5.7)	4 (4.6)	8 (9.0)	7 (5.1)	10 (9.7)
Changes in childcare	29 (4.6)	9 (3.9)	4 (4.6)	6 (7.5)	2 (1.4)	8 (7.8)
Refusal of in-person work	23 (3.6)	15 (6.6)	1 (1.1)	0	6 (4.3)	1 (1.0)
Shift work	22 (3.5)	4 (1.8)	5 (5.7)	10 (11.2)	2 (1.4)	2 (1.9)
Support lacking for in-person work	5 (0.8)	2 (0.9)	1 (1.1)	0	1 (0.7)	1 (1.0)
Other	1 (0.2)	0	0	0	0	1 (1.0)

Note: Data represent frequency counts of affirmative responses. *Respondents may provide multiple answers.

Table 4. Top professional development needs of Nova Scotian dietitians identified during the COVID-19 pandemic ($n = 122$).

Frequency of affirmative responses to challenges faced*	All ($n = 333$)	Hospital/Acute Care ($n = 134$)	Primary health ($n = 36$)	Public health ($n = 42$)	Long-term care ($n = 74$)	Other ($n = 47$)
Virtual facilitation skills	39 (11.7)	13 (9.7)	11 (30.6)	1 (2.4)	3 (4.1)	11 (23.4)
Emergency preparedness	36 (10.8)	11 (8.2)	4 (11.1)	3 (7.1)	13 (17.6)	5 (10.6)
Infection prevention and control	33 (9.9)	12 (9.0)	3 (8.3)	1 (2.4)	14 (18.9)	3 (6.4)
IT for virtual care – clinicians	23 (6.9)	11 (8.2)	5 (13.9)	1 (2.4)	2 (2.7)	4 (8.5)
Communications	25 (7.5)	5 (3.7)	2 (5.6)	4 (9.5)	8 (10.8)	6 (12.8)
IT virtual care – clients	25 (7.5)	13 (9.7)	3 (8.3)	0	4 (5.4)	5 (10.6)
Training/education	16 (4.8)	7 (5.2)	1 (2.8)	2 (4.8)	4 (5.4)	2 (4.3)
Critical care	15 (4.5)	6 (4.5)	1 (2.8)	3 (7.1)	3 (4.1)	2 (4.3)
Nutrition support	14 (4.2)	14 (10.4)	0	0	0	0
Immunization programs	14 (4.2)	13 (9.7)	0	0	1 (1.4)	0
Daily case monitoring	13 (3.9)	2 (1.5)	0	7 (16.7)	3 (4.1)	1 (2.1)
Dysphagia management	12 (3.6)	2 (1.5)	1 (2.8)	4 (9.5)	3 (4.1)	2 (4.3)
Screening (COVID-19)	12 (3.6)	3 (2.2)	1 (2.8)	4 (9.5)	3 (4.1)	1 (2.1)
Screening (risk factors)	11 (3.3)	9 (6.7)	0	0	2 (2.7)	0
Contract tracing	11 (3.3)	4 (3.0)	0	4 (9.5)	3 (4.1)	0
Epidemiology	10 (3.0)	1 (0.7)	1 (2.8)	5 (11.9)	3 (4.1)	0
Leadership skills	6 (1.8)	3 (2.2)	0	00	1 (1.4)	2 (4.3)
Determinants of health	5 (1.5)	2 (1.5)	2 (5.6)	0	0	1 (2.1)
Immunology	5 (1.5)	2 (1.5)	0	1 (2.4)	1 (1.4)	1 (2.1)
Testing/lab analysis	4 (1.2)	1 (0.7)	1 (2.8)	0	2 (2.7)	0
None	4 (1.2)	0	0	2 (4.8)	1 (1.4)	1 (2.1)

Note: Data represent frequency counts of affirmative responses. *Respondents may provide multiple answers. IT = information technology.

Dietetic preceptor roles

The most frequently identified impacts on preceptor roles during the pandemic in ascending order were delayed placements (38); cancelled placements (35); fewer in-person opportunities (19); fewer interns accepted (8); and reduced duration of placements (6). About one-fifth of respondents (21.7%, $n = 33$) reported that they did not take interns. The greatest proportion of cancelled placements was observed in PH (9 of 14 responses; 64.2%) and LTC (10 of 21 responses; 47.6%). AHC and PHC saw the greatest proportion of delayed placements (25 of 63, 40.0% and 8 of 25 responses, 32.0%, respectively).

Opportunities and insights

Overall, 31.2% (n = 34) of respondents felt that their skills and expertise were not fully utilized during the pandemic. This was higher in the primary/PH (54.2%, $n = 13$) and "other" (40.0%, $n = 10$) work sectors compared to other sectors ($P = 0.009$). Most (80.4%, $n = 90$) participants felt that they had learned new skills or knowledge at this time but that there were not opportunities for career advancement in dietetics (85.2%, $n = 98$). When asked if the pandemic had created new roles for dietitians, 21.2% ($n = 24$) agreed, 42.5% ($n = 48$) disagreed, and 36.8% ($n = 42$) were unsure.

Qualitative findings

Table S1 (Supplemental File 2[1]) details four key themes identified from open-ended questions. Within the first theme "perceived education or training experiences that facilitated dietitian's new work roles during the pandemic", dietitians reported drawing on their prior experience, educational and training opportunities (e.g., webinars), professional skills, and shared knowledge with their colleagues and networks to adapt to new work roles. Within the second theme "skills or expertise that were not fully utilized", dietetic expertise was perceived as not fully utilized by some participants in all work sectors but more frequently cited by PH dietitians. Within the third theme "insights on important learnings to be incorporated into dietetic education", key learnings from practice during the pandemic included qualities such as resilience, adaptability, problem-solving, flexibility, and self-care. Content identified for incorporation into dietetic education included virtual/telephone communication and counselling and emergency preparedness. Participants from the PH sector noted that future dietitians need a more robust understanding of PH principles and health equity work. Finally, the fourth theme was "miscellaneous pandemic-related work experiences". Supporting quotes for each question and work sector are provided in Table S2.

DISCUSSION

In the first phase of this mixed methods study, we describe changing work roles and responsibilities of dietitians during the initial waves of the COVID-19 pandemic in Nova Scotia. Most respondents reported a change in their main work role as well as increased work responsibilities. As reported elsewhere [12, 13], this disruption created significant stress and anxiety for dietitians working in various settings. Stress/anxiety, changing work expectations, and rapidly evolving safety protocols were the most frequently cited challenges. Despite these challenges, 55% of participants also stated feeling somewhat or very prepared to take on new work roles and most felt somewhat or very supported by their employer and reported learning new skills. Employers and managers can foster resilience in their healthcare teams by employing the strategies found to be helpful here (e.g., regular team and individual check-ins, providing adequate and timely information during periods of transition, providing relevant PD, and mental health supports). These findings are consistent with the literature, which has identified HCW's professional relationships and institutional availability of supports as crucial aids during the COVID-19 pandemic [2]. Key findings are discussed below by dietetic work sector.

Dietitians working in the PH sector reported experiencing the highest rates of change in work roles and settings during the pandemic. This was expected, given that the PH system was leading the governmental response to the pandemic at the time. Together, dietitians working in PH and PHC also reported the highest rate of perceived additional work responsibilities (78%). Dietitians in PH were mainly redeployed to pandemic-related roles. In their comments, they frequently noted how skills or expertise were not fully utilized in these new roles. This is unsurprising, as PH work generally requires graduate level training and much of the new work was reportedly more administrative in nature (e.g., contact tracing). The new work was also characterized as physically and emotionally exhausting, while core PH nutrition work (e.g., equity, food insecurity) was set aside. Thus, PH dietitians were under pressure to cover COVID-related tasks while watching priority work go unaddressed, which may have contributed to feeling less supported by their employer. This reprioritization of PH work is especially concerning given the high prevalence of children and families living in poverty [16], food insecurity, and chronic disease observed in Nova Scotia. These conditions have been shown to disproportionately affect Nova Scotia's Indigenous peoples, African Nova Scotians, and aging population [9]. Thus, the adverse effects of the pandemic are expected to impact these underserved groups the most [10]. Future work in emergency preparedness should consider how to support the health of underserved populations as the PH system is redirected to an emerging epidemic or pandemic.

Due to limited sample size, it was difficult to separate PHC dietitian data from PH sector data in this study. However, participants from PHC also appeared to experience many new roles and settings, taking on new non-dietetic work in administrative tasks, resource development, and/or education/training roles. Conversely, a participant described volunteering for COVID-specific duties but not being released by management despite perceiving their current tasks as not

time-sensitive or prioritized. Dietitians' work in PHC was more frequently impacted by physical distancing and the transition to working from home. Their top identified PD needs were virtual facilitation skills and IT for virtual care. A recent survey of 200 American dietitians also observed an increased use of telehealth-based care for nutritionally at-risk patients during the pandemic [14]. Dietitians in that study noted the potential of telehealth to improve patient outcomes as well as care delivery through reduced appointment no-show rates and travel-related barriers to in-person care. However, several barriers were also identified, including access to technology and reliable connectivity; lack of resources or organizational support; and increased HCW workload [14]. Thus, future work should seek to optimize telehealth experiences for the patient as well as care providers.

Dietitians working in AHC reported fewer changes in work roles during the pandemic than other work sectors. Most frequently, these changes included new roles in education or training, in-patient nutrition care, and resource development. The top PD need identified for this sector was in critical care. Some AHC dietitians reported reduced work roles (e.g., outpatient appointments) and decreased time with patients as contributing to the perception that their skills or expertise were not being fully utilized. For this sector, isolation from co-workers was a frequently cited challenge. Open-ended comments supported this by noting how some health professions transitioned to work at home, leaving one dietitian to perform team-based care in-person. Future research in emergency preparedness should consider plans to deliver interprofessional care and telehealth care delivery in AHC settings.

Dietitians working in LTC also reported a high rate of change in work roles during the pandemic (62%) and had the second highest rate of feeling unsupported by their employer. Most frequently, role changes meant new work in education/training roles, procurement, administration, and communications. Client care was perceived to be negatively impacted by a reduction in clinical assessments that could be done. Some respondents from LTC advocated for pay equity with AHC dietitians and were disappointed that their role was deemed non-essential. This finding aligns with concerns over workload, commitment to the LTC sector, and lack of relationship between wages and years of experience on the job, previously identified by British Columbian dietitians [17]. Similar to the AHC sector, further research should consider nutrition care delivery for LTC residents during emergencies as well as employment policies in these settings. This is especially true, given the rising complexity of clinical care being provided in LTC settings.

Adverse impacts on dietetic education opportunities such as placement delays, cancellations, reduced duration, and/or reduced in-person student experiences were evident in all sectors. A survey of American dietetic students reported that 62% of students perceived the quality of their education to be negatively impacted by the pandemic and 49% felt they had learned less than before the pandemic [18]. The majority (64%) also reported their own mental health concerns [18]. Dietetic training practica are intensive but generally only last one year or less. In-person, experiential learning is especially critical at this time, and therefore, gaps in educational experiences may adversely impact professional exam completion and entry to practice. While study participants identified several qualities (e.g. resilience, flexibility, problem-solving, and self-care) as being important future elements of dietetic education, the current competency-based approach to education does not ensure strategies that address these are part of curricula. Educators may need to consider approaches beyond the current competency framework to meet future emergency preparedness needs.

This study has several limitations. As an online survey, all data were self-reported. Despite pre-testing, some questions could have been misinterpreted by participants. However, the provision of many open-ended entry options in the survey aided in data interpretation. Online data collection may have led to more engagement from younger or computer literate participants. The use of a convenience sample may have also led to inclusion of participants with stronger opinions on the topic; however, over 25% of the target audience was reached. It should also be noted that this survey is limited to experiences in the first three waves of the COVID-19 pandemic (prior to Omicron variant).

RELEVANCE TO PRACTICE

This exploratory survey identified unique experiences, role changes, and challenges for various dietetic work sectors in Nova Scotia in response to the first three waves of the COVID-19 pandemic. Despite the challenge of a high stress/anxiety period, dietitians expressed confidence in their professional education and training that enabled them to adapt to a quickly changing work environment. Dietitians working in PH, PHC, and LTC reported experiencing more work responsibilities, more change, and perceived less employer support during the pandemic. The present findings will be of interest to health administrators, professional bodies, and academic institutions to inform strategies for strengthening dietetic practice, building resilience, and preparing for future emergencies.

Acknowledgements

The authors wish to acknowledge our colleagues and dietetic interns who assisted in recruitment efforts. We also appreciate the time and effort from our dedicated participants.

Financial Support: Funding was provided by SSHRC Individual Partnership Engage Grants (PEG) COVID-19 Special Initiative [#1008-2020-1081].

Conflicts of Interest: The authors declare that there are no conflicts of interest.

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