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Original article

Integrating the ecological approach in health promotion for older adults: a survey of programs aimed at elder abuse prevention, falls prevention, and appropriate medication use

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Summary

This study assesses the extent of integration of the ecological approach in disease prevention and health promotion (DPHP) programs for older adults in a sample of organisations offering such programming in Québec, Canada.

Following from our previous work, the study used a model identifying intervention settings, targets, and strategies as independent dimensions of ecological programming. As a first step, public health units, local community health centres and seniors' day centres were surveyed to identify DPHP programs for older adults. In a second phase, detailed data were obtained about programs in the theme areas of elder abuse prevention, falls prevention, and appropriate medication use. Overall, 132 programs were investigated including 17 public health unit programs, 72 local community health centre programs, and 43 day centre programs. All data were obtained through telephone interviews. The DPHP programs for these organisations tended to be situated in organisational (especially health organisation) and community settings, with individual clients and organisations as main intervention targets. Assessment of the level of integration of the ecological approach showed it to be relatively low, especially in the local community health centres and seniors' day centres.

Keywords: **Health promotion – Prevention and control – Aged – Falls prevention - Elder abuse – Medication.**

The aging population of many Western countries has become a public health concern [1]. Although health promotion and prevention have the potential to prevent incapacity and improve quality of life in the later years [2–4], disease prevention and health promotion (DPHP) programs have often overlooked older adults as a target population [5–7]. Moreover, existing programs tend to adopt a traditional approach targeting individual capacities, rather than more innovative approaches such as creating conditions that foster healthy aging and autonomy in the context of supportive environments [8, 9].

Indeed, there is now broad consensus that effective DPHP programming requires an ecological approach, targeting multiple settings and using multiple intervention strategies [10–12]. Although the potential value of this approach has been recognized in several health domains, including tobacco control [13] and diabetes prevention [14], it is still often poorly integrated into public health practices [7, 9, 15, 16]. There is little information on the use of the ecological approach in DPHP programs for older adults.

This study assesses the extent of integration of the ecological approach in DPHP programs for older adults in three types of organisations offering such programming in Québec, Canada. It follows our previous work in the area of tobacco control, and examines the extent to which a contemporary, ecological vision of health promotion for elderly people has pervaded the practices of organisations that provide services to this population. For the sake of parsimony, the analysis focuses on programs aimed at the three priorities for older adults listed in the Québec public health platform [17], namely prevention of abuse and neglect, falls prevention, and appropriate

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medication use. A more detailed rationale for the selection of these priorities appears in the methods section. The study uses a model of an ecological approach to health promotion and prevention programming based on Green et al. [10] and Richard et al. [18], and inspired by systems theory [19] as well as other theoretical work in health promotion [11, 20, 21]. The model identifies intervention settings, targets and strategies as independent dimensions of ecological programming. The more a program integrates multi-targeted and multi-setting interventions, the more it is deemed to be ecological (a detailed description of the conceptual model and methodology guiding our work can be found in Richard et al. (1996) [18]).

Methods

Population of organisations and programs

The DPHP programs under study were offered by three types of publicly-funded health organisations in the province of Québec, Canada: 1) public health units, whose mandate is to develop, implement, and evaluate health promotion and disease prevention programs and to monitor population health status and determinants. There are 18 such units in the province; 2) *Centres locaux de services communautaires* (CLSCs, or Local Community Health and Social Services Centres; total of 147 in the province), which cover smaller territories than the public health units and are to provide front-line curative and preventive health and social services using a global community health approach; and 3) seniors' day centres (total of 124 in the province), which have mandates for rehabilitation and secondary and tertiary prevention for clients with loss of autonomy referred from other sectors of the health care system.

The term "program" has disparate meanings among these organisations, and can include discrete activities, projects or complex programs involving a large number of activities. For the purposes of this study, we defined "program" – the unit of analysis – as the organisation's entire ensemble of DPHP initiatives (programs, interventions, etc.) offered in the last 12 months to achieve one or more objectives related to the health of older adults. Defined as such, a program can be general; in this case it includes DPHP initiatives related to all themes. A program can also be specific to a particular health theme, thus including all initiatives related to a particular health theme, such as a falls prevention program or a nutrition program.

Two exclusion-inclusion criteria were applied with respect to the types of DPHP initiatives selected. Firstly, since our perspective focused on public and population health, we did not inventory care provided by a health professional during a clinical intervention with a patient or client. This choice is in keeping with the methodology adopted in the United States by the Task Force on Community Preventive Services in conjunction with the preparation of the *Guide to Community Preventive Services* [22]. Secondly, with regard to epidemiological data showing that a majority of older adults display a pathology or chronic condition [3], we included tertiary prevention activities. However, given the confusion surrounding this concept [23] and in order to limit the scope of the research, we confined ourselves to initiatives aimed at preventing a relapse or complications. Treatment programs focusing on cures, palliation and/or rehabilitation, which are occasionally classified as tertiary prevention programs [23], were excluded.

Data collection

This descriptive study was conducted in two phases:

Phase 1: In the first phase, the total population of DPHP programs for older adults in the three types of organisations was inventoried. Directors of all organisations of all three types were invited to participate in the study, first by letter and then in a telephone follow-up with a trained interviewer. If agreement was obtained, contact information was obtained in each organisation for a staff member knowledgeable about the organisation's programming for older adults. Telephone interviews were then conducted in each organisation with these key informants to obtain the complete list of DPHP initiatives for older adults conducted or ongoing in the last 12 months. Seventeen public health units (94 %), 109 CLSCs (74 %) and 98 seniors' day centres (79 %) agreed to participate in this phase. These data were summarized and returned to the respondents by mail or telephone for validation. In total, 266 interviews were conducted in Phase 1.

The programs that had been identified were then classified according to the types of activities they involved and the themes they addressed. This resulted in the identification of 35 families of activities (for example: information/education, immunisation) addressing a total of 16 main themes (for example: physical health, social problems, mental health). Inter-rater reliability was assessed for the classification of 106 randomly selected initiatives. Percentages of agreement over the types of activities and themes were 83.0 % and 85.9 %, respectively. Results of Phase 1 are presented in Richard et al. [24].

Phase 2: In the second phase, more detailed information was gathered about the initiatives in order to assess the level of integration of the ecological approach in programming through the identification of intervention settings, targets, and strategies. However, given the large number of initiatives identified, particularly in the CLSCs and the seniors' day centres, we decided to focus Phase 2 data collection on three theme areas among the initiatives of these organisations, as identified from the classification exercise in Phase 1: prevention of elder

abuse and neglect; falls prevention; and appropriate medication use (in public health units, a detailed description of all initiatives was obtained, but to facilitate comparisons across organisation types, we focus only on programs in the three theme areas). In addition to their status as official priorities in the province-wide public health platform [17], these choices were based on the following rationale:

Prevention of elder abuse and neglect: Elder abuse is a problem in developing as well as developed nations. It can be intentional or unintentional, and of various types: physical, psychological, financial, sexual, and neglectful. It is associated with injury, illness, loss of productivity, and isolation and distress [25]. A Canadian survey reported that seven percent of seniors declared some sort of physical, emotional, or financial abuse [26]. A multi-level ecological model has been proposed to organise and understand the determinants of elder abuse [27].

Falls prevention: Studies have reported that between 30% and 60% of community-dwelling older adults (65 years and over) fall each year [28]. Falls result in significant morbidity and mortality among this clientele. In Canada, they are by far the most frequent cause of serious injury among those seniors who have experienced an injury that limits their activities: two-thirds of the most serious injuries among those 65 to 74 are attributed to falls; this climbed to 80% among those 75 and older [29]. Various forms of ecological interventions are effective in preventing falls in the elderly [30].

Appropriate medication use: Polypharmacy, the excessive prescription and self-administration of medications, continues to be a significant issue in geriatrics and gerontology [31]. Although adults aged 65 and older make up only about 12% of the population, they have been found to use 30% of all prescription medications [3, 31]. Considering also the large amount of over-the-counter medications, vitamins, and herbal remedies this population is consuming, as well as various factors such as multiple providers, the occurrence of visual and cognitive impairment, etc., the potential for medication mishaps is great. Willar [32] reports that between 10% and 30% of older adult hospital patients are admitted for a problem related to medication toxicity. It has been argued that environmental factors such as the involvement of family and health care providers can contribute to more appropriate medication use [3, 33].

Organisations that had declared initiatives in the three target themes at Phase 1 were deemed eligible, and invited by letter and telephone to participate in Phase 2. Table 1 presents detailed information about the number of eligible organisations, refusal rates, and the number of programs identified in these eligible organisations (n total = 132 programs: 17 public health unit programs, 72 CLSC programs, and 43 seniors' day centre programs). As listed in Phase 1, project managers for each initiative included in these programs were contacted to obtain a detailed description of their initiative. A total of 126 interviews were conducted (some respondents were able to describe more than one initiative) and no refusal was noted at this level. All interviews were conducted between April 2003 and April 2004 by five trained interviewers, using a structured interview guide. Interviewers were instructed to collect descriptions rich enough to allow the application of the analytical procedure and thus the identification of intervention settings, targets, and strategies (see below). The average interview length was 50 min.

Data coding

The interviews were transcribed verbatim, and the interview data were coded using a coding scheme similar to that used in Richard et al. [13, 18]. Each program was coded according to its intervention settings, targets and strategies, as follows:

Table 1 Number of Eligible Organisations[a] and Participation Rates (Québec, Canada, 2003–2004)

		Number of Programs[b]			
Number of eligible organisations	Number of refusals	Abuse/violence/ neglect	Falls	Medication	Total
a) Public Health Units					
11	2	5	8	4	17
b) CLSCs					
61	1	26	28	18	72
c) Day centres					
47	3	6	28	9	43

Note. CLSC: Centre local de services communautaires (Local community health centres)

[a] Organisations identified in Phase 1 as having DPHP (Disease Prevention and Health Promotion) initiatives for at least one of the three target themes.

[b] A program is defined here as the combination of all initiatives (e.g., projects, programs, and interventions) dealing with one of the three targeted health themes (elder abuse prevention, falls prevention, and appropriate medication use) offered by an organization in the 12 months prior to the survey.

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Intervention settings: defined as the social system(s) in which clients, defined as persons whose health is to be promoted, are reached. These include: organisations (defined as systems with formal multi-echelon decision processes operating in pursuit of specific objectives. Health organisations or stores are a few examples of organisations); communities (restricted geographical areas composed of persons and organisations such as neighbourhoods, cities, towns and villages); societies (larger systems possessing means to control several aspects of the lives and development of their constituent subsystems. Examples of societies are provinces, states and countries); and supranational systems (associations composed of two or more societies. The Commonwealth Association and the European Economic Community are examples of such systems). The smallest inclusive system(s) in which the clients were located was coded as the intervention setting for an initiative.

Intervention targets: Based on the McLeroy et al. [11] proposition as well as other ecological models of health promotion interventions [20, 21], this second dimension includes five distinct types of potential targets of a DPHP program (DPHP): individual clients themselves (IND); the interpersonal environment, that is, the persons and small groups of persons with whom the client is in contact (INT); organisations (ORG) to which clients belong; communities in which individuals live and work (COM); and the political systems in the macrosocial environment (POL).

Intervention strategies: The five intervention targets are conceptualized as building blocks for intervention strategies, with two types of possible relationships: 1) direct transformation of one or several aspects of a given target, represented graphically by an arrow linking the program to its target(s). An information booth aimed at distributing information about the appropriate use of medication to clients of a pharmacist is an example of a direct transformation of the IND target (DPHP → IND). A training program aimed at improving physicians' knowledge, attitudes and skills about physical activity promotion among older adults is an example of a direct transformation of an ORG target (DPHP → ORG → IND); 2) the creation of a network among two or more targets, identified by the use of brackets surrounding the targets to be networked. For example, networking interventions could involve the organisation of a self-help group involving clients themselves (DPHP → [IND-IND]), or the organisation of a coalition grouping together different organisations (e.g., DPHP → [ORG-ORG] → IND). The five targets (IND, INT, ORG, COM, and POL) and the two different types of relationships (direct transformation and the creation of a network) can be used in numerous combinations to define DPHP intervention strategies.

Integration of the ecological approach: In line with Richard et al. [18], a score of 0 was given to programs with only one intervention strategy, independently of the number of settings or number of ways that strategy was used. A score of 1 signified a program with at least two different intervention strategies that did not include the direct targeting of the clients (DPHP → IND), regardless of the number of settings. Scores of 2, 3 and 4 were given to programs with respectively one, two, and three or more interventions settings in which at least two strategies were implemented, one of which directly targeted the clients.

The analytical phase began with the intensive training of two coders. These two coders independently reviewed each verbatim interview transcription, and coded the initiatives described first into intervention settings, and then into intervention targets and strategies within each setting. During the analysis, all disagreements were noted and brought to the attention of the principal investigator (LR), and consensus was attained through discussion. In accordance with our definition of programs (the combination of all initiatives offered by the organisation in the last 12 months to achieve one or more objectives related to one of the three health theme targeted in the study), the information extracted for each transcription was aggregated at the organizational level to obtain scores for each relevant program in the organization.

Results

Intervention settings

Table 2 summarizes the frequency and types of intervention settings. In the public health units, programs for three target themes most often involved one (41.2 % of programs) or two (29.4 %) settings, with these usually being the community or organisations. Over half (56 %) of the CLSC programs had one setting, while 29 % had two and 15 % had three or more. In the day centres, most programs involved a single setting (88 %), usually organisations but sometimes the community.

Table 3 provides more information on the types of settings used in these programs. In public health unit programs, health organisations emerged as the most frequent settings identified (in 76.5 % of programs). The community (52.9 %), and to a lesser extent, seniors' associations (35.3 %) and community organisations (35.3 %), appeared to be used fairly often. The settings most frequently used by CLSC programs were also the community (76 %) and health organisations (30 %). As well, seniors' associations and community organisations emerged as 19 % and 17 % respectively as settings for the CLSCs. Other types of settings (retailers, society as a whole and private residences) were also identified. Seniors' day centres were relatively more likely to situate their DPHP interventions in health organisations (91 %) than either of the other two settings they used:

Table 2 Frequency of Programs[a] as a Function of Number and Type of Intervention Setting (Québec, Canada, 2003–2004)

Total Number of Settings	Type	Number
Public Health Units (n = 17 programs)[b]		
1	Community	4
	Organisations	3
	Total	7 (41.2 %)
2	Two types of organisations	5 (29.4 %)
3	Two types of organisations and community	2 (11.8 %)
4	Three types of organisations and community	3 (17.6 %)
CLSCs (n = 72 programs)		
1	Community	33
	Society	1
	Organisation	6
	Total	40 (55.6 %)
2	Organisation and community	17
	Two types of organisations	4
	Total	21 (29.2 %)
3	Two types of organisations and community	7
	Organisation, community and society	1
	Total	8 (11.1 %)
4	Three types of organisations and community	2
		2 (2.8 %)
5	Community, society and three types of organisations	1 (1.4 %)
Seniors' Day Centres (n = 43 programs)		
1	Community	4
	Organisation	34
	Total	38 (88.4 %)
2	Organisation and community	2
	Two types of organisations	3
	Total	5 (11.6 %)

Note. CLSC: Centre local de services communautaires (Local community health centres)
[a] A program is defined here as the combination of all initiatives (e.g., projects, programs, and interventions) dealing with one of the three targeted health themes (elder abuse prevention, falls prevention, and appropriate medication use) offered by an organisation in the 12 months prior to the survey.
[b] Percentages should be interpreted with caution since the sample size is small.

(community (14 %) and community organisation (7 %)) (The difference between these is that the former setting includes the community as whole, while the latter involves an intervention reaching clients within an organisation that happens to be community-based.) In general, the number of settings identified in programs was highest in public health units (mean = 1.82 settings), lowest in the day centres (mean = 1.12), with CLSCs occupying an intermediate position (mean = 1.65).

Targets and intervention strategies

Table 4 presents the findings on types of intervention targets used in these programs. These data show that almost all (94.1 %) of the public health unit programs targeted organisations. Three other types of targets were identified in these programs: the client as a direct target (29.4 %), the interpersonal environment (23.5 %) and the community (5.9 %). None of the 17 public health unit programs included a political target. In the CLSCs, 76 % of programs targeted their clients directly, 44 % targeted organisations, and 17 % targeted the clients' community environments. In contrast, in the seniors' day centre programs, 90 % targeted clients directly, while 14 % targeted organisations and 7 % targeted clients' interpersonal environments.

The mean number of strategies per program varied according to the type of organisation: 1.59, 1.57 and 1.14 strategies for the public health units, the CLSCs and the seniors' day centres, respectively. Table 5 shows the frequency with which different DPHP strategies were being used in programs, ac-

Table 3 Frequency of Programs[a] as a Function of Different Types of Intervention Settings (Québec, Canada, 2003–2004)

Type of Setting	No. (%) of programs		
	Public Health Units (n =17 programs[b])[c]	CLSCs (n = 72 programs[b])	Day Centres (n = 43 programs[b])
Community	9 (52.9 %)	55 (76.4 %)	6 (14.0 %)
Health organisation	13 (76.5 %)	22 (30.1 %)	39 (90.7 %)
Coalition or association	6 (35.3 %)	14 (19.4 %)	–
Community organisation	6 (35.3 %)	12 (16.7 %)	3 (7.0 %)
Retailer	1 (5.9 %)	3 (4.1 %)	–
Society	–	3 (4.1 %)	–
Private residences	–	8 (11.1 %)	–
Worksite	–	–	–

Note. CLSC: Centre local de services communautaires (Local community health centres)
[a] A program is defined here as the combination of all initiatives (e.g., projects, programs, and interventions) dealing with one of the three targeted health themes (elder abuse prevention, falls prevention, and appropriate medication use) offered by an organisation in the 12 months prior to the survey.
[b] Because a program may include more than one intervention setting, the total frequency exceeds the number of programs.
[c] Percentages should be interpreted with caution since the sample size is small.

Table 4 Frequency of Programs[a] as a Function of Different Types of Targets (Québec, Canada, 2003–2004)

Type of Target	Public Health Units (n =17 programs[b])[c]	CLSCs (n = 72 programs[b])	Day Centres (n = 43 programs[b])
Clients (IND)	5 (29.4 %)	55 (76.4 %)	39 (90.7 %)
Interpersonal environment (INT)	4 (23.5 %)	10 (13.9 %)	3 (7.0 %)
Organisations (ORG)	16 (94.1 %)	32 (44.4 %)	6 (14.0 %)
Community (COM)	1 (5.9 %)	12 (16.7 %)	2 (4.7 %)
Political (POL)	0 (0.0 %)	4 (5.6 %)	2 (4.7 %)

Note. CLSC: Centre local de services communautaires (Local community health centres)
[a] A program is defined here as the combination of all initiatives (e.g., projects, programs, and interventions) dealing with one of the three targeted health themes (elder abuse prevention, falls prevention, and appropriate medication use) offered by an organisation in the 12 months prior to the survey.
[b] Because a program may include more than one target, the total frequency exceeds the number of programs.
[c] Percentages should be interpreted with caution since the sample size is small.

cording to the results of the coding exercise. In public health unit programs, the majority of programs (76.5 %) included a strategy aimed at targeting individuals through organisations (DPHP → ORG → IND). Strategies involving the direct targeting of the clients (DPHP → IND) or of his/her interpersonal environment (DPHP → INT → IND) were also frequently found. Other types of strategies were found to be very marginal. Compared with the two other types of organisations, the range of intervention strategies appeared larger in CLSCs. Identified in 75 % of these organisations, a strategy involving a direct targeting of clients was most frequent. Strategies aimed at organisational targets and involving either modification of targets (DPHP → ORG → IND) or networking among targets (DPHP → [ORG-ORG] → IND) were also identified fairly often in CLSCs. A similar pattern emerged for intervention strategies involving action on an interpersonal (DPHP → INT → IND) or community (DPHP → COM → IND) target level. The profile found in seniors' day centres was quite clear – the direct targeting of clients emerged as the preferred strategy. Other types of intervention strategies were found very infrequently. Appendix A presents selected examples of the intervention strategies shown in Table 5. The list provided is not exhaustive but gives an illustrative overview of the variety of intervention strategies that were being used within these three types of organisations.

The degree of integration of the ecological approach is shown in Table 6. These data show clearly that distributions are skewed towards weak or no integration of the approach, in all three types of organisations. Only five out of 17 public health unit programs (29.4 %) were found with moderate-high or high scores on the scale. In CLSCs and day centres, no more than 24 % and 2 % respectively of programs were scored in the two highest levels of integration.

Table 5 Frequency of Programs[a] as a Function of Different Types of Intervention Strategies by Type of Organisation (Québec, Canada, 2003–2004)

Strategy[b]	Public Health Units (n=17 Programs[b])[c]	CLSCs (n = 72 Programs[b])	Day Centres (n = 43 Programs[b])
DPHP → IND	5 (29.4 %)	54 (75.0 %)	38 (88.4 %)
DPHP → ORG → IND	13 (76.5 %)	17 (23.6 %)	2 (4.7 %)
DPHP → INT → IND	4 (23.5 %)	8 (11.1 %)	3 (4.2 %)
DPHP → [ORG – ORG] → IND	2 (11.8 %)	12 (16.7 %)	1 (2.4 %)
DPHP → [IND – IND]	–	1 (1.4 %)	1 (2.4 %)
DPHP → [ORG – POL] → IND	–	4 (5.6 %)	2 (4.7 %)
DPHP → COM → [IND – IND]	1 (5.9 %)	1 (1.4 %)	–
DPHP → COM → IND	1 (5.9 %)	10 (13.9 %)	1 (2.4 %)
DPHP → ORG → INT à IND	1 (5.9 %)	–	–
DPHP → [INT – ORG] → IND	–	1 (1.4 %)	–
DPHP → [INT – INT] → IND	–	1 (1.4 %)	–
DPHP → [ORG – COM] → IND	–	1 (1.4 %)	1 (2.4 %)

Note. CLSC: Centre local de services communautaires (Local community health centres) . DPHP : disease prevention and health promotion program; IND : clients; ORG : organisation; INT : other individuals and small groups of individuals in the interpersonal environment; POL : political systems; COM = community. Square brackets indicate a strategy involving networking of elements within the brackets.

[a] A program is defined here as the combination of all initiatives (e.g., projects, programs, and interventions) dealing with one of the three targeted health themes (elder abuse prevention, falls prevention, and appropriate medication use) offered by an organisation in the 12 months prior to the survey.

[b] Because a program may include more than one intervention strategy, the total frequency exceeds the number of programs.

[c] Percentages should be interpreted with caution since the sample size is small.

Table 6 Extent of Integration of the Ecological Approach (Québec, Canada, 2003–2004, n = 132 programs[a])

Integration score	Type of organisation		
	Public Health Units (n = 17 programs)[b]	CLSCs (n = 72 programs)	Day Centres (n = 43 programs)
0 – None	11 (64.7 %)	44 (61.1 %)	38 (88.4 %)
1 – Low	1 (5.9 %)	4 (5.6 %)	0 (0.0 %)
2 – Medium low	0 (0.0 %)	7 (9.7 %)	4 (9.3 %)
3 – Medium high	5 (29.4 %)	15 (20.8 %)	1 (2.3 %)
4 – High	0 (0.0 %)	2 (2.8 %)	0 (0.0 %)

Note. CLSC: Centre local de services communautaires (Local community health centres) .

[a] A program is defined here as the combination of all initiatives (e.g., projects, programs, and interventions) dealing with one of the three targeted health themes (elder abuse prevention, falls prevention, and appropriate medication use) offered by an organisation in the 12 months prior to the survey.

[b] Percentages should be interpreted with caution since the sample size is small.

Discussion

Although previous reports in other regions have indicated a lack of attention paid to DPHP programs for older adults [5–7], this study suggests that there is a relatively greater amount of such programming in Québec, particularly in the public health sector. However, despite the potential for DPHP programs using an ecological approach to prevent incapacity and improve quality of life in the later years, this study showed that it remains poorly integrated in the practices of many organisations that offer services to the older adult population in the province.

In examining the three types of organisations studied, integration of the ecological approach seems higher in public health units and CLSCs than in the seniors' day centres, which tend to use fairly traditional individual intervention strategies in a limited number of settings. Public health units intervene in a greater number of settings than either CLSCs or day centres although CLSCs are present in a relatively greater diversity of settings than are the public health units. Public health units and CLSCs use more DPHP strategies in their programming than do day centres; however, in both CLSCs and day centres, intervention strategies are concentrated in direct-to-individual activities. It is only in public health units where strategies involving organisational-level change are frequently employed. In some ways these results are not surprising, as public health units have likely been involved in DPHP for longer, have likely had greater exposure to ecological frameworks, and can

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draw on support for ecological programming from other sectors (e,g., tobacco control). Nonetheless, a large proportion of DPHP programs in all the organisations studied use intervention strategies in a single setting, targeting older adults directly. This rather traditional approach to disease prevention and health promotion is complemented relatively rarely by strategies involving networking among individuals and organisations, community development strategies, or actions targeting various domains of social policy. These findings contrast with our previous tests of this model with tobacco programming for youth, where the ecological approach was found to be much more integrated into professional practices [13].

Yet, as for tobacco control, elder abuse and neglect, inappropriate medication use, and falls are the result of multiple, diverse, and interacting causes. For example, in a brief review, Kenny [28] distinguished three categories of risk factors for falling: intrinsic (poor grip, lack of strength, balance disorders, etc), extrinsic (polypharmacy, etc.), and environmental (poor lightning, etc.). Consistent with this body of knowledge are a growing number of studies showing the potential of population-based interventions where "the whole community is the focus of the intervention rather than individuals within the community and [where] the multiple strategies coalesce into an overall program of activity [34] (pp. 3–4). In Sweden, for instance, an inter-organizational prevention program against injuries among the elderly [35] included the use of mass media, community displays, home visits, community walking programs, and environmental modifications targeting roads and walkways as well as lighting in public places. A recent Cochrane review [34] determined that such comprehensive programs are effective in decreasing fall-related injuries.

A similar rationale could be elaborated to justify the adoption of comprehensive programs that include environmental intervention targets for the two other intervention themes examined. In an application of the ecological approach to elder abuse and neglect, Schiamberg & Gans (27) identified factors such as cultural norms, organizational and public policies as contributing to a climate that is fertile for elder abuse. Environmental factors such as provider and marketing practices of pharmaceutical companies have been identified [36] as being linked to inappropriate medication use by the elderly. Clearly, given the multifactorial etiology inherent to these public health issues, intervention programs should target not only older adults and their caregivers but also their organizational, community, and political environments. The results of this study support the idea that there are numerous and yet unexploited strategies that could be enacted to more effectively respond to older adults' needs in the areas of elder abuse prevention, falls prevention, and appropriate medication use.

The relatively infrequent rate at which interventions at the community and political levels are targeted can be explained in several ways. On the one hand, organisations working with older adults may lack capacity for this type of intervention. On the other hand, it could be a result of a form of ageism on the part of health professionals [37]. In this sense, lack of capacity might stem from the lack of positive practice models for alternative forms of DPHP intervention among practitioners [7, 37]. However, the growing prevalence of collaborative bodies such as coalitions involving multiple community stakeholders suggests that a more intersectoral and perhaps ecological thinking is beginning to pervade health services for older adults, as it is in many domains [38]. These forms of collaboration may lead to more interventions involving networking [13] and broader engagement of community and political stakeholders.

The research strategy used in this study, including programs offered by three types of organisations with different mandates vis-à-vis their populations, allows a differential examination of intervention settings, targets, and strategies as dimensions of ecological programming. That day centres are more focused on individual-level interventions directed at health and social problems [24] is not surprising, given their mandate to maintain the autonomy, consolidate capacities, and support caregivers of elderly people who are already faced with loss of autonomy. Similarly, the mandate of public health units to inform the population and advise regional health authorities on all aspects of DPHP and intersectoral collaboration would naturally lead them to engage in a wider variety of intervention settings and strategies. It is in the CLSCs, which also have a public health mandate and a mission that would call on a diverse range of settings, targets and strategies, that the status of ecological programming is somewhat surprising. It has been noted that recent health reforms in CLSCs have meant that DPHP in general has lost ground to curative and rehabilitative services [39], perhaps limiting their capacity for a more global approach to prevention and health promotion.

Limitations of the study

Although this study provides an encompassing portrait across the entire population of organisations working with older adults in Québec, it is limited by the need to focus on only a relatively narrow range of theme areas. Our own data collected from the public health units but not reported here suggest that some nuances could be added to the findings if all facets of programming for older adults were examined. The use of interview data to develop program descriptions is also a limitation, as it was impossible to validate the extent or quality of the programming described in the interviews. Future

work could include a validation component or, ideally, assess the extent to which ecological interventions are actually experienced by those targeted.

Conclusion

DPHP practice for older adults could be enriched and strengthened by the adoption of more comprehensive, innovative approaches that foster healthy aging and autonomy in the context of supportive environments. These approaches could broaden the repertoires of targets, settings and strategies used in DPHPs for older adults. As the aging population moves the health of seniors into the forefront of the public health agenda, more research will be needed to identify the factors associated with integration of the ecological approach into programs and to help determine the most effective forms of ecological DPHP programming, in support of health gains for this priority population.

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Appendix A: Selected Examples of Intervention Strategies[a]

Strategy[b]	Description	Example
DPHP → IND	Programs aimed at building clients' competencies, knowledge, beliefs, attitudes and values	A series of conferences on medication use offered to the older adult clients
DPHP → [IND-IND]	Establishment of relationships between clients in order to have them share ways to restore or promote their own health	Self-help groups for older women being abused
DPHP → INT → IND	Programs aimed at modifying the clients' interpersonal environment	Leaflets and television ads about physical safety in bathrooms aimed at older adults' children
DPHP → [INT-INT] → IND	Establishment of relationships between members of the clients' interpersonal environment in order to have them share ways to restore or promote clients' health	Self-help group for family caregivers
DPHP → ORG → IND	[1)] Organisational change programs aiming to modify health-compromising aspects of an organisation [2)] Training programs whose objectives are to increase relevant health promotion competencies of important actors in organisations [3)] Organisational support	– [2)] A training program aimed at improving the intervention skills of day centre volunteers for falls prevention. [3)] Professionals acting as organisational consultants for community organisations involved in elder abuse
DPHP → [ORG-ORG] → IND	Establishment of relationships between organisations devoted to or interested in a specific health issue	Elder abuse local intervention team that includes representatives from the local health departments, the police, and community organisations
DPHP → COM → IND	Training programs whose objectives are to increase relevant health promotion competencies of community representatives	Training sessions on elder abuse prevention offered to community representatives
DPHP → [ORG-POL] → IND	Establishment of relationships between elected officials and organisations devoted to or interested in a specific health issue	Community coalition devoted to older adult abuse and bringing together representatives from various sectors: health, transportation, as well as elected officials
HP → [INT-ORG] → IND	Establishment of relationships between persons from the interpersonal environment and organisations devoted to or interested in a specific health issue	Workshops aimed at networking family caregivers and representatives from community organisations

[a] Adapted from Richard et al. (1996)
[b] IND : Clients
INT : Other individuals and small groups of individuals forming the interpersonal environment
ORG : Organisations
COM : Communities
POL : Political systems

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