Int J Public Health (2018) 63:273–282
https://doi.org/10.1007/s00038-017-0990-5

ORIGINAL ARTICLE

Access to information on home- and community-based services and functional status

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Received: 18 November 2016 / Revised: 29 May 2017 / Accepted: 1 June 2017 / Published online: 16 June 2017

Abstract
Objectives To examine differences in access to home- and community-based service (HCBS) information among older adults of different functional status.
Methods Cross-sectional survey of 5435 out of 11,000 randomly selected Swiss older community dwellers from the state of Vaud. Analyses stratified by functional status examined characteristics associated with limited access to HCBS information, based on self-reported knowledge on where to find information on 13 HCBS.
Results Proportionally, more individuals did not know where to look for information in the functionally vulnerable group than in the robust and dependent ones for virtually each service. Among robust individuals, males and persons with low financial status had increased odds of limited access. Low financial status was also negatively associated with access to information among vulnerable people. Belonging to the youngest group increased the odds of limited access for dependent individuals.
Conclusions Efforts should be made to improve elders' access to HCBS information by developing specific strategies relevant to each functional status group. Further studies on access to HCBS information should be conducted using complex conceptual frameworks as it has been done for HCBS use.

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Keywords Older adult · Access to information · Home- and community-based services · HCBS · Functional status

Introduction

Many Western countries have to rethink their healthcare and service delivery systems to adapt to the needs of ever older populations (Rechel et al. 2009) and to the fact that most older adults would like to age in their own homes (de Jong et al. 2012; Kochera et al. 2005). A higher level of use of home- and community-based services (HCBS) has been shown to increase the odds of older adults remaining in the community (Chen and Thompson 2010; Tennstedt et al. 1994; Toseland et al. 1999). Researchers have found that HCBS utilization differs according to service recipients' functional impairments (Alkema et al. 2006; Casado et al. 2011), gender, age, living arrangement, and other socio-demographic characteristics (Alkema et al. 2006; Houde 1998), as well as caregivers' characteristics (Casado and Lee 2012; Laditka et al. 2001).

Andersen's behavioral model of health services use is one of the most frequently applied framework to understand service utilization (Wacker and Roberto 2016). It presents the use of health services as being the result of predisposing characteristics, enabling resources and need. It identifies the awareness of such services as a personal characteristic that fits into the enabling component of the model (Andersen and Newman 1973; Andersen 1995). Although it is difficult, based on the literature and the heterogeneous designs of previous studies, to determine the extent to which awareness of services predicts service use (Wacker and Roberto 2016), a lack of information has been identified as a reason for unmet HCBS needs (Casado et al. 2011; Casado and Lee 2012). While the multiplication of

services and providers might make information finding more difficult, little is known about older people's access to information about HCBS. Because access to information is a prerequisite to service use, a better understanding of access to HCBS information is essential for a better insight into HCBS utilization.

In 2013, we conducted a survey to inform policy makers on the level and sources of access to HCBS information among 65 and older community dwellers in the state of Vaud, Switzerland (Cattagni Kleiner et al. 2014). Switzerland is one of the Organization for Economic Co-operation and Development countries, where formal long-term care for seniors is the most developed and where the nursing home institutionalization rate for people receiving long-term care is the lowest (OECD 2013). In addition, the proportion of older people living in nursing homes in the state of Vaud is among the lowest in Switzerland (Petrini and Moreau-Gruet 2014). A wide range of HCBS in the state are provided through many different institutions, public and private, with no centralized management or source of information. Thus, we hypothesize that access to information on available services is probably suboptimal in the older population. Our second hypothesis is that access to HCBS information varies according to functional status, since the nature and level of potential HCBS needs are different whether ones does or does not have difficulties performing activities of daily living. For the same reason, we are expecting that socio-demographic characteristics associated with lower level of access to HCBS information might differ according to functional status.

Methods

Data source and participants

Data were drawn from the 2013 Survey on Access to HCBS information in the state of Vaud, Switzerland (Cattagni Kleiner et al. 2014). With 749,373 permanent residents in 2013, Vaud is the third most populated of all 26 states of Switzerland (Office fédéral de la statistique 2015). The target population consisted of retired community dwellers. The Cantonal compensation office of the Canton of Vaud, which manages the retirement pension distribution of about two-thirds of the retired population in the state, provided us with an anonymized database of their 50,780 pension recipients living at home and having reached legal retirement age (64 for women and 65 for men) as of July 2013.

A random sample of 11,000 people was drawn from this file, stratified by age, gender, and whether or not individuals were receiving means-tested government subsidies to complement their retirement pension. This sample was checked against the frame for accurate distribution by region. Due to their smaller number and their expected lower response rate, people receiving subsidies as well as people 85 and over were oversampled to allow for analyses by socio-demographic characteristics.

Data collection

A self-administered two-page anonymous paper questionnaire was mailed by the compensation office to sampled individuals. A cover letter explained that they could freely choose not to participate. No incentives were linked to their participation and there was no risk associated with taking part in the survey. The letter specified to participants that they could fill out the questionnaire with the help of someone else, but that responses were to reflect their own situation and opinions. After questionnaires receipt and manual check, data were extracted using the software TeleForm™.

There was no data collection follow-up. The overall response rate was 52% (5745 valid questionnaires), with slightly lower rates among males and, as anticipated, among individuals 85 and over and government subsidy recipients. However, there was no gap larger than five points with respect to the overall response rate and subsequent data weighting made up for these differences. Item non-response ranged from 1 to 7%, and there was no imputation.

Limited access to HCBS information

Access to HCBS information was addressed by the question "Would you know, today, where to find information about…" (followed by a list of 13 HCBS, listed in Fig. 1). Restricting the analysis to people having responded to all 13 items of the question, the number of positive answers, therefore, ranged between 0 (would not know where to ask for any of the listed services) and 13 (would know where to ask for all). In each functional group, participants positioned in the lowest tertile of this distribution were considered having limited access to HCBS information. This tertile-based cutoff corresponded to a number of 0–4 services among functionally robust elders, 0–3 services among vulnerable elders, and 0–6 services among dependent elders.

Functional status assessment

Functional status was assessed by asking about impairments of activities of daily living (ADL) (Katz and Stroud 1989; Lawton 1990). Basic ADL impairments were captured with the

following question: "Is it sometimes difficult for you to undertake the following activities: take a shower or a bath, get dressed, get in/out of bed or armchair, use the toilet, eat?" Instrumental ADL impairments were addressed as follows: "Is it sometimes difficult for you to go out, run errands or undertake tasks at home that you were used to doing yourself before?" The four response options were similar for both questions:

- No, I do not have any difficulties.
- I have difficulties with one or more of these activities/tasks, but do not need help.
- I am being helped for one or more of these activities/tasks, and this help matches my needs.
- I need help for one or more of these activities/tasks but do not receive any or enough.

Aggregating response options to the questions on basic and instrumental ADL allowed classifying participants by functional status. Individuals were considered "robust" if they reported neither basic nor instrumental ADL impairments. People needing help with one or more basic ADL were classified as "dependent". The intermediate "vulnerable" category included individuals who could neither be considered functionally "robust" nor "dependent" (i.e., they may have declared having some difficulties but not needing any help or that they needed help with instrumental ADL only).

Covariates

The socio-demographic variables used for the analyses were gender, age group (65–74 years, 75–84 years, 85 years and over), financial status (means-tested government subsidy recipient/non-recipient), living arrangement (living alone or not), current caregiving status (caregiver/non-caregiver), and having recently sought out *any kind* of HCBS information, i.e., in the 3 years preceding the survey (yes/no).

Data weighting and analysis

Data were weighted by gender, age, and government subsidy benefit to correct for the small differences in subgroups' response rates and for the initial oversampling. To do so, questionnaires for which gender and/or age information was missing (310 out of 5745, i.e., 5%) were discarded before running the analyses (the government subsidy recipient variable, provided by the compensation office, was known for 100% of the respondents). A check against local statistics showed that the data were representative of the retired community dwellers of the canton of Vaud in 2013 with regard to these variables. They also accurately reflected the regional distribution of the older population and their living arrangements (living alone or not).

Within each functional status group, bivariate analyses using Pearson's Chi-square test compared the proportion of individuals with limited access to HCBS according to socio-demographic characteristics. Results were considered significant when the p value was less than 0.05.

Multivariate logistic regression analyses were performed using limited access to HCBS information as the outcome. All available socio-demographic variables from the survey, as well as the variable pertaining to a recent search of information, were used as covariates in the model.

All analyses were conducted using the Stata 13 software (StataCorp, College Station, TX).

Results

Characteristics of the target population

Table 1 shows the distribution of the population, by functional status and socio-demographic characteristics. About two-thirds could be considered "robust", 27% "vulnerable", and 8% were functionally "dependent". The proportions of women, of individuals aged 85 and over, of government subsidy recipients, and of individuals having recently sought out HCBS information were the greatest in the functionally dependent group and the lowest in the robust group. The proportion of people living alone was lower among robust people (33%) and higher in the dependent group (59%). The proportion of caregivers was about the same across all functional status groups (17% overall).

Knowledge about gateways to HCBS

Overall, participants were more knowledgeable about in-home services (except for night-sitting services) than about more logistical and technical ones, intermediary structures, or other services (Fig. 1). Information on night-sitting services, home adaptations, and senior apartments globally scored as the least accessible.

Functionally vulnerable people more often than others did not know where to seek information for virtually each service asked about in the survey. Figure 1 also shows that dependent people were more knowledgeable than robust and vulnerable ones particularly about finding information on in-home as well as on technical and logistic services.

Access to HCBS information by socio-demographic characteristics

Results of bivariate analyses in Table 2 show, for each functional status group, the proportion of individuals with

Table 1 Percentage distribution of the population overall and functional status groups, by socio-demographic characteristics: Vaud, Switzerland, 2013.

Characteristics	Total	Functional status			*p* value*
	(100%, $N = 5435$)	Robust (65%, $N = 3426$)	Vulnerable (27%, $N = 1443$)	Dependent (8%, $N = 442$)	
Gender ($N = 5435$)					
Male	41	47	32	28	0.000
Female	59	53	68	72	
Age group ($N = 5435$)					
65–74 years**	56	68	38	21	0.000
75–84 years	32	27	42	34	
85 years and over	12	5	20	45	
Financial status ($N = 5435$)					
Government subsidy recipient	15	11	20	27	0.000
Non-recipient	85	89	80	73	
Living arrangement ($N = 5366$)					
Alone	40	33	51	59	0.000
Not alone	60	67	49	41	
Current caregiving status ($N = 5128$)					
Caregiver	17	17	17	15	0.781
Non-caregiver	83	83	83	85	
Recently sought out information ($N = 5192$)					
Yes	34	27	42	64	0.000
No	66	73	58	36	

Source: access to information on home- and community-based services and functional status

* *p* value from Pearson's Chi-square test

** 64–74 years for women

limited access to information. Among the robust and vulnerable populations, proportionally, more males than females belonged to the limited access group. There were also statistically significant differences per financial status and caregiving status in the robust group: more government subsidy recipients and non-caregivers had limited access to information. Among dependent elders, a higher proportion of younger than older individuals had limited access to information. Finally, as expected, in all three functional status groups, people who had recently sought out information had increased access to information as compared to people who had not.

Characteristics independently associated with limited access to information

Not having recently sought out HCBS information was the only recurring characteristic linked to limited access in the three functional status groups (Table 3). However, given its direct relationship to the outcome, this variable is considered an adjustment factor.

Among robust persons, males and government subsidy recipients had higher odds of limited access than females (OR = 1.54, 95% CI 1.23–1.94) and non-recipients (OR = 1.93, 95% CI 1.56–2.38) (Table 3). Financial status was similarly associated with the outcome in the functionally vulnerable group (OR = 1.45; 95% CI 1.09–1.93). In the functionally dependent population, younger individuals had increased odds of having limited access to HCBS compared to the oldest participants of this group (OR = 2.41, 95% CI 1.20–4.85).

Discussion

This study collected novel data on access to information on home- and community-based services (HCBS), based on a large and representative sample of older adults in Switzerland.

A suboptimal knowledge of the gateways to HCBS information

While all three functional status groups in the older population have potentially significant current or future needs for this kind of support, they did not seem to have an

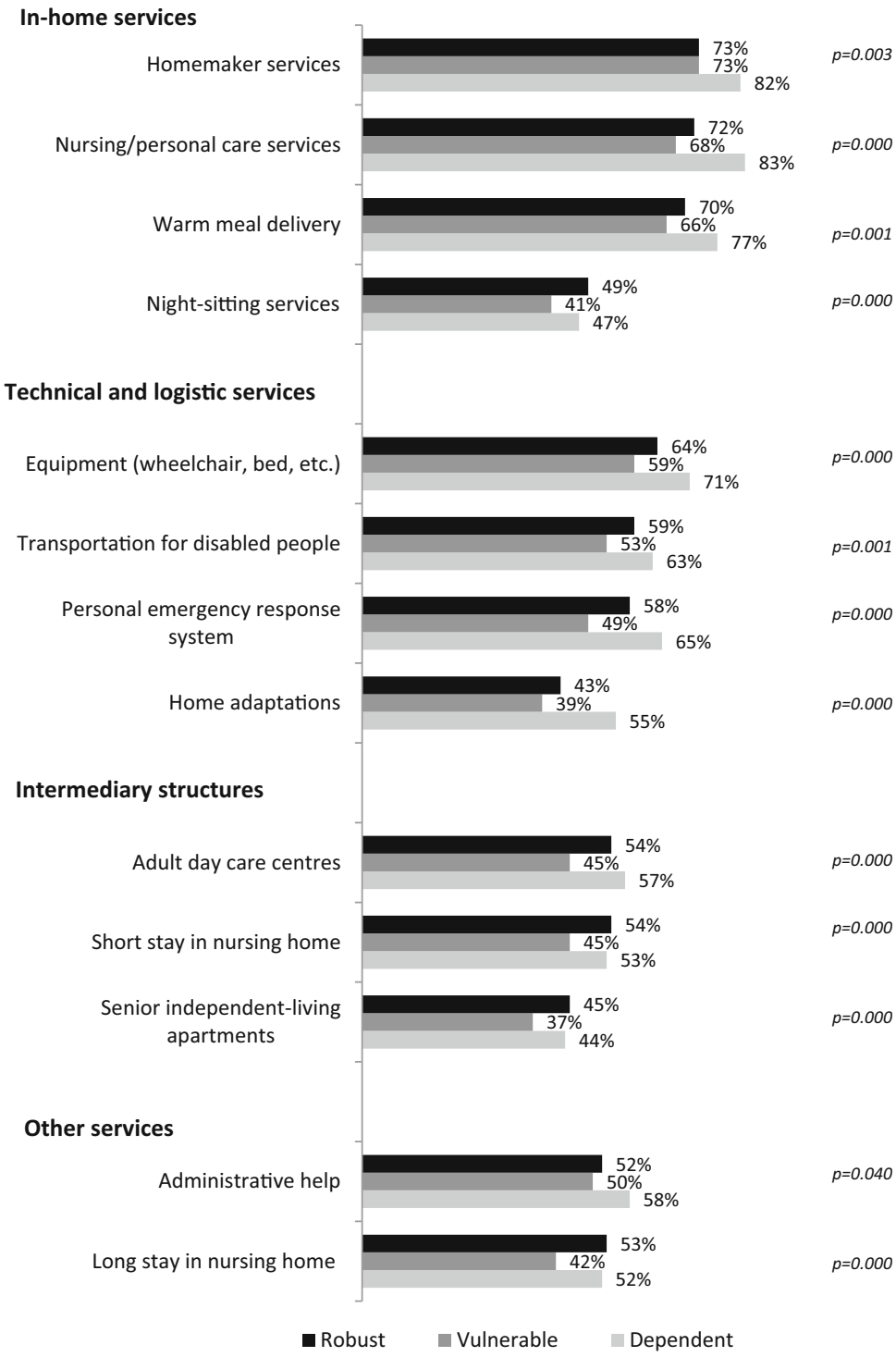

Fig. 1 Percentage of individuals who knew where to find information on various home- and community-based services, per functional status: Vaud, Switzerland, 2013

Source: access to information on home- and community-based services and functional status
N= 5054 to 5219, depending on the service
p value from Pearson's Chi-square test

optimal knowledge of the gateways to accessing HCBS services. These results corroborate previous ones in the same region (Santos-Eggimann 2014) and complement others on the lack of awareness of HCBS supply among more specific groups of elders in the United States (Casado and Lee 2012; Casado et al. 2011). Establishing goals for an acceptable level of access to information on HCBS would be a complex endeavour. However, this study shows

Table 2 Percentage of individuals with limited access to information on home- and community-based services, by functional status and socio-demographic characteristics: Vaud, Switzerland, 2013.

Characteristics	Robust (first tertile = 0–4 services) $N = 3426$		Vulnerable (first tertile = 0–3 services) $N = 1443$		Dependent (first tertile = 0–5 services) $N = 442$	
	Percentage	p value*	Percentage	p value*	Percentage	p value*
Gender		0.000		0.020		0.055
Male	38		39		46	
Female	27		31		34	
Age group		0.098		0.133		0.021
65–74 years**	31		36		48	
75–84 years	35		35		42	
85 years and over	37		28		28	
Financial status		0.000		0.067		0.539
Government subsidy recipient	46		38		39	
Non-recipient	31		33		36	
Living arrangement		0.918		0.676		0.286
Alone	32		34		34	
Not alone	33		33		40	
Current caregiving status		0.000		0.794		0.331
Caregiver	24		32		44	
Non-caregiver	34		34		35	
Recently sought out information		0.000		0.000		0.000
Yes	13		19		25	
No	39		44		58	

Source: access to information on home- and community-based services and functional status

* p value from Pearson's Chi-square test

** 64–74 years for women

a potential for improvement to, at least, increase the amount of knowledge about all of these services to the same level as knowledge about in-home services.

Disparities in access to information

This work reveals disparities in terms of access to information on HCBS. Functionally vulnerable elders less often knew where to find information about virtually each HCBS than robust and dependent ones. These individuals are also those who are more likely to need such information in the near future. Dependent people, by being more prone to already be receiving such services and, therefore, to be in contact with various actors in the HCBS system, have a better knowledge about the access gateways to such information. As for robust individuals—who had less often recently sought out information—they might be more confident in their ability to find that information should the need arise, perhaps as a result of being more accustomed to using the Internet for information seeking (Cattagni Kleiner et al. 2014). These findings complement those of Casado et al. (2011) linking poorer functional status and less informal support—a state that most probably corresponds here to functionally vulnerable individuals—with a higher risk of unmet HCBS needs.

With regard to gender disparities, functionally robust males had higher odds of limited access to HCBS information than their female counterparts. Likewise, in Santos-Eggimann's study (2014), men were less likely than women to declare knowing where to find information on various HCBS services. Moreover, in general and as found here (data not shown), men are less active than women in seeking health-related information (Rutten et al. 2006; Wang et al. 2013). Various elements in the literature hint to the fact that men who are cared for might rely more on informal care than women (Katz et al. 2000; Brown and Chen 2008), which might explain a part of this difference. This study did not, however, reveal any statistically significant differences by gender among vulnerable and dependent people. Most dependent individuals probably were already using formal services, and therefore, no differences arose between males and females in this group. As for the comparison between vulnerable males and females, the results could suggest a weakening of a gender gap in

Table 3 Characteristics associated with limited access to information on home- and community-based services, by functional status: Vaud, Switzerland, 2013.

Characteristics	Robust (N_{ob} = 2267)			Vulnerable (N_{obs} = 1437)			Dependent (N_{obs} = 592)		
	Odds ratio*	Confidence interval (95%)	*p* value	Odds ratio*	Confidence interval (95%)	*p* value	Odds ratio*	Confidence interval (95%)	*p* value
Male	**1.54**	**1.23–1.94**	**0.000**	1.38	0.98–1.95	0.067	1.31	0.70–2.47	0.397
65–74 years** (reference: 85 years and over)	0.85	0.63–1.13	0.264	1.32	0.94–1.85	0.103	**2.41**	**1.20–4.85**	**0.013**
75–84 years (reference: 85 years and over)	0.90	0.64–1.26	0.524	1.39	1.00–1.93	0.053	1.73	0.96–3.11	0.069
Government subsidy recipient	**1.93**	**1.56–2.38**	**0.000**	**1.45**	**1.09–1.93**	**0.011**	1.26	0.76–2.09	0.377
Living alone	0.99	0.77–1.28	0.966	1.05	0.73–1.51	0.780	1.01	0.55–1.88	0.966
Non-caregiver	0.98	0.70–1.38	0.920	0.80	0.51–1.27	0.353	0.65	0.30–1.41	0.274
Did not recently seek out information	**4.11**	**3.00–5.63**	**0.000**	**3.20**	**2.27–4.50**	**0.000**	**4.61**	**2.72–7.80**	**0.000**

Source: access to information on home- and community-based services and functional status

N_{obs} unweighted number of observations

* Results from multivariate logistic regression analyses adjusting for all characteristics presented in the table

** 64–74 years for women

access to information as the functional status worsens. However, this would need to be confirmed with longitudinal data.

Among dependent elders, age seems to play a role in access to information—the youngest were more at risk of limited access to HCBS information. One can assume that the oldest had been living with functional disabilities for a longer period of time. Moreover, due to their age, they might have had more acquaintances having experienced similar difficulties.

In addition, these results underline the negative influence of lower financial status on access to HCBS information among robust and vulnerable elders. Various cofactors can account for this finding, including a lower educational level, less beneficial social connections (Phelan et al. 2004, 2010), and the probable higher prevalence of language barriers among low income individuals [foreigners being proportionally more represented among retirement subsidy recipients in Switzerland (Portmann 2014)]. Indeed, lower local language proficiency has been identified as a predictor of unmet needs (Casado and Lee 2012; Hurley et al. 2013) and has been associated with poorer self-rated health, lower health services use, and more frequent experience of barriers to service use (Kim et al. 2011). However, this study did not find statistically significant differences by financial status for the functionally dependent group. In the same fashion as noted for the lack of difference by gender, this too can probably be explained by the fact that most of the individuals in this group were cared for with the help of formal services. Therefore, no differences arose between government subsidy recipients and non-recipients.

As could be expected, individuals who had not recently sought out information on HCBS were less likely to know about gateways to HCBS within each of the three functional status groups.

If living alone is a predictor of nursing home placement (Miller and Weissert 2000), this study did not find any association between living arrangement and access to information on HCBS which in turn could possibly influence the ability to stay at home for a longer time.

Bivariate analysis results showed that caregivers more often knew where to find information on HCBS. However, our multivariate model showed that being a caregiver in itself is not associated with the studied outcome. Rather, the former result seems to be due to the fact that caregivers had more often recently searched for information than non-caregivers (data not shown). Thus, complementing other studies' findings (Casado et al. 2011; Toseland et al. 1999), this result shows that caregivers do not necessarily have an optimal level of knowledge about available services.

Limitations

Data collection did not include a follow-up and the response rate was 52% (5745 valid questionnaires). If our weighted data are matching the regional distribution of this

population regarding gender, age, government subsidy, and living arrangement for the same year, we were not able to determine if non-respondents differed from respondents with regard to functional status and being a caregiver at the time of the study.

The outcome, i.e., "limited access to HCBS information", was defined as the lowest tertile of the distribution of the number of services known, in each functional group. As mentioned in the method section, it corresponded to a different number of services in each functional group (0–4 services for robust individuals, and 0–3 and 0–6 services, respectively, in the vulnerable and dependent groups). As an alternative definition, the number of services known corresponding to the lowest tertile in the overall population could be used as a cutoff (0–4 services) in each functional group. This would correspond to 33, 40, and 25% of participants in the functionally robust, vulnerable, and dependent groups, respectively. Opting to apply the first definition was based on our second hypothesis, verified in the data, that access to HCBS information varies according to functional status. Using a relative rather than an absolute cutoff takes this reality into account and is more appropriate when trying to find factors associated with limited access to HCBS information within each functional group.

Economic status in this study was defined by the receipt of additional subsidies to the retirement pension and, therefore, was not an optimal indicator (Shavers 2007), but was one that could easily be obtained for all respondents. In addition, asking more specifically about which services information had recently been sought out would have allowed for more precise outcomes (Kosloski and Montgomery 1994), but this was not carried out to keep the questionnaire short and acceptable.

The limited number of covariates reflects the fact that this short survey was not originally designed with the intention of writing a scientific article but rather of bringing new information to policy makers while enrolling as many participants as possible. Therefore, it did not address other aspects possibly relevant to the topic of this paper, such as whether the help received for ADL was formal or informal, possible cognitive impairment and chronic health conditions, self-perceived health, education and health literacy (Casado et al. 2011; Suka et al. 2015), or the characteristics of potential caregivers of participants (Houde 1998; Laditka et al. 2001; Casado and Lee 2012). Neither was the original aim of the survey to assess whether there was an interest for HCBS. Therefore, no information was collected about refusal of care or any potential preference for informal care (Laditka et al. 2001; Casado and Lee 2012; Hurley et al. 2013; de São et al. 2015). Also unknown is the possible reliance on the informal network for accessing information on HCBS.

Implications

Studying access to HCBS information shows yet again that individuals aged 65 and over cannot be considered a homogeneous group. They present a wide range of functional and socio-demographic situations. While aiming to reach everyone, HCBS communication specialists should take into account these specific characteristics to develop targeted strategies, and especially to reach functionally vulnerable individuals, men, and people with lower economic status. One of the challenges faced when trying to reduce and eliminate health disparities is, therefore, also extremely relevant when specifically applied to HCBS use: ensuring "that the information is available to all of those who need it, regardless of their social class, cultural, geographic, and individual backgrounds" (Viswanath 2006). In addition, our data suggest that knowledge on where to find HCBS information differs according to the level of need for such services and to types of services. Thus, the form and the content of communications around these services should be tailored to best fit the needs of these different groups.

In the survey from which these data were drawn, respondents, regardless of their functional status, indicated their physician as their preferred source of information on HCBS (Cattagni Kleiner et al. 2014). Therefore, being on the front line, primary-care physicians and by extension, nurses, other medical office staff, and social workers, should be made aware of the importance of their role in the dissemination of information. They should be well informed about the services available, but also probably given guidance and help to be able to address inquiries. At the organizational level, part of the solution for improving access to HCBS information may be to have centralized access to information. In addition, targeting younger populations of older adults could be useful in an effort to let people know what services are available before they require them.

In the future, we can hope that with the younger generations of older adults, the use of the Internet will close some of the socio-demographic gaps that we observe today. In the survey mentioned above, the same participants cited the Internet as their fourth preferred source for HCBS information, and this option was more popular among males and younger elders.

Conclusion

Multilevel conceptual frameworks, based on Andersen's predisposing factors, enabling resources and need (Andersen and Newman 1973; Andersen 1995), have identified access to information as an enabling factor to HCBS utilization. Our findings add insight into the complexity of

behaviours related to HCBS use by showing that even the prerequisite to service utilization—access to information—is neither uniform nor universal, but to the contrary, unequal and suboptimal, even in a region where HCBS for older people are considered highly developed. Enabling older adults to stay home for a longer period of time will thus require a better understanding of the determinants of access to HCBS information. This is why we recommend that further studies on access to HCBS information be conducted using complex conceptual frameworks as it has been done for HCBS utilization.

Acknowledgements This work draws upon a survey financed by the Public health service of the Canton of Vaud. The questionnaire was designed in consultation with this institution. No specific funding was received for this analysis. The authors would like to thank all the individuals who participated in the survey. They also wish to express their gratitude to the staff of the Cantonal compensation office of the Canton of Vaud in Clarens for its valuable help with sampling and questionnaire mailing.

Compliance with ethical standards

According to Swiss Federal Law 118b on human subject research (C.f. http://cer-vd.ch/soumission/premiers-pas.html), this study did not require the approval of an ethics committee, due to the type of data collected and its method of collect. The data collection process was entirely anonymous. The types of questions asked could not bring up any singular information that would make participants identifiable in the data base and the results are presented in an aggregate manner. Participants could freely choose not to participate, no incentives were linked to their participation, and there was no risk associated with taking part in the survey.

Conflict of interest The authors declare to have no conflict of interest.

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