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Snowball Sampling vs. Respondent Driven Sampling in Regional Research. Comparing the Use of the Methods to Study Migrants Working in Elderly Care[1]

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The aim of the article is to compare the effectiveness of the snowball sampling and Respondent Driven Sampling (RDS) for research on migrants working in elderly care. Analyses are based on results of in-depth semi-structured individual interviews conducted among 42 migrants working as caregivers in the Opole region (Poland). This group can be considered as a "hidden population" because, due to the work they provide in the household, frequently illegally, they often demonstrate a strong desire to remain invisible. The methods were compared in terms of: (1) duration of the survey, (2) diversity of the sample, (3) difficulty in applying both sampling methods. In the conducted survey, snowball sampling made it possible to find and reach the required number of respondents faster than the RDS. Both groups differed in terms of gender (more men were recruited by snowball sampling), legality of employment (there were fewer lawfully employed in the RDS group) and average length of stay in Poland (migrants recruited by snowball sampling stayed in Poland for an average of 3.3 years and enrolled by RDS for 1.7 year). In both groups, recruitment was not self-driven by the chain of social networks of respondents. The reason was, inter alia, the structure of the social network of the migrant, which only to a small extent covered other migrants employed in senior care. The article closes the research gap for comparative research using snowball sampling and RDS on the same hard-to-reach population. The survey also attempts to verify to what extent face-to-face RDS can be used to survey hidden and rare populations scattered over a larger area than a city or agglomeration. Therefore the RDS method has been used to recruit respondents from the whole region without limiting the scope to one city or agglomeration.

Key words: elderly carers, migrants, snowball sampling, hard-to-survey population, Respondent Driven Sampling, labour market

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Introduction

Given the increasing number of migrants in Europe and worldwide, it is becoming more important to find the right research methods, including recruitment, data collection and obtainment of representative results (McKenzie & Mistiaen, 2007; Reichel & Morales, 2017).

This applies primarily to so-called "hidden" populations, which are not covered by official statistics. Douglas Heckathorn (1997) defines "hidden" populations as communities that are difficult to determine in terms of size, which makes it impossible to prepare a sampling frame. Moreover, these groups are often characterised by a strong will to remain invisible. Respondents may not want to lose their anonymity and disclose their status, e.g. migrants who are illegally staying or working in the host country. There are therefore two reasons why the implementation of research in hidden groups is associated with specific challenges: the individual barriers posed by the respondents and the difficulty in selecting a sample (Ellard-Gray, Jeffrey, Choubak, & Crann, 2015).

The aim of the article is to compare the effectiveness of the use of snowball sampling and Respondent Driven Sampling (RDS) in the implementation of research among migrants working in senior care. Increasing knowledge regarding methods of research implementation in this group of migrants is due to the growing demand for care services dedicated to the elderly (Da Roit, 2014; Vanella, Heß, & Wilke, 2020). The increase in the demand for migrant work in the elderly care sector is caused by demographic changes (ageing population) and the reduction in the number of multi-generational families living together and the loosening of family ties (Bettio, Simonazzi, & Villa, 2006; Da Roit & Weicht, 2013; Hochschild, 2015; Lutz & Palenga-Möllenbeck, 2011; Szweda-Lewandowska & Kałuża-Kopias, 2019).

The difficulty in conducting research on this group results from several reasons. First of all, there is heterogeneous employment of migrants in senior care, i.e. it includes people living with their charges (so-called living-in) and people who rent a flat and provide care work on an hourly basis (the so-called living-out) (Gallotti, 2009), which affects the ability to reach the respondents. Secondly, employers of foreigners who take care of seniors are usually households and migrants work illegally (Van Hooren, 2010), therefore they want to stay hidden. Thirdly, families employing migrants in senior care are also an additional obstacle for researchers. As they employ them illegally (Di Rosa, Melchiorre, Lucchetti, & Lamura, 2012) they also aim to ensure that information on the presence of the migrant worker is not spread. The work of foreigners in senior care can therefore be considered as "doubly hidden". Fourthly, the provision of work directly in the home of the elderly, the lack of necessity (and sometimes possibility) of contact with the wider community makes the implementation of research on this category of migrants a methodological and practical challenge. Fifthly, the challenge in the implementation of the research is also the temporary

nature of this migration, which means that the respondents do not live permanently in the country of immigration but come only for certain periods to provide work. All of this makes migrants working in senior care a group that is difficult to get involved in research and represents a unique challenge for researchers.

Discussed analyses in the article are based on results of in-depth semi-structured individual interviews conducted among 42 migrants working as carers for elderly persons in the Opole region (Poland). It was deliberately assumed that the survey was carried out on a small group of migrants, because it was of a qualitative, exploratory nature, which can be treated as a pre-test. The respondents, two groups of 20 people each, were identified using two methods: snowball sampling and Respondent Driven Sampling. Both methods are recommended for use in small subpopulations (Reichel & Morales, 2017) and are based on a network of respondents' contacts. The snowball sampling method allows for more interference from the researcher, who "searches" for more respondents. In the RDS method, the recruitment process is based primarily on the activity of individual respondents.

The article closes the research gap for comparative research using snowball sampling and RDS on the same hard-to-reach population (in this case migrants employed in senior care). The survey also attempts to verify to what extent the face-to-face RDS method can be used to survey hidden and rare populations scattered over a larger area than a city and its surroundings. So far, RDS-based face-to-face research has generally been carried out in cities or metropolises, thus in a compact area. The webRDS was used to survey respondents in larger geographical areas.

The research was to find answers to the following questions:

1. Which methods allow to reach the assumed number of respondents faster?
2. What differences will emerge in groups depending on the applied sampling method?
3. What challenges (research difficulties) may arise when using each method?

The paper starts with a review of the literature and a comparison of the use of snowball sampling and RDS. Then the assumptions of the conducted research are discussed and the structure of the recruited group is described. The following section refers to the process of research implementation and the results. The article finishes with conclusions containing recommendations for further research.

Literature review

1.1. Snowball sampling

The snowball sampling technique is used when the size of a population cannot be determined (no sampling frame is available) and is difficult to reach for various reasons (rare, hidden populations) (Faugier & Sargeant, 1997; Watters & Biernacki, 1989).

It was introduced by Coleman (1958) and developed by Goldman (1961) to survey the structure of social networks. It is based on social contacts, mainly of the first persons recruited for the research – preferably leaders in their communities (Ten-Houten, 2017) and their knowledge of the surveyed community. It is based on the idea that research participants indicate the next persons who can be included in the research (Vogt 1999), and these persons indicate the next participants in the research and so on, 'driving' the sampling process. There is no limit to the number of persons who can be indicated as respondents. The method consists of a non-random sample selection that does not guarantee unbiased estimators, but can be used to estimate the size of the population (Frank & Snijders, 1994). A system of incentives for respondents for participation and recruitment (incentivised snowball sampling) may be used, but is not required (Gyarmathy, Johnston, Caplinskiene, Caplinskas, & Latkin, 2014).

Snowball sampling has evolved over time into a method used in research on hard to reach or even hidden populations (Heckathorn, 2011) and is designed not only to explore the network, but also a good way to unofficially reach respondents and contact them. It is useful mainly for exploratory, qualitative and descriptive research (Atkinson & Flint, 2001). Some researchers believe that the success of snowball sampling depends almost exclusively on the personal or professional contacts of the researcher (Waters, 2015), because it is based not only on the network of respondents, but also on interviewers. This is primarily due to the fact that it is not always possible to satisfactorily involve respondents as so-called research assistants, i.e. persons pointing out subsequent units for research (Biernacki & Waldorf, 1981).

The lack of representativeness of the results is indicated as one of the key disadvantages of this method. The difficulty in obtaining unbiased results is caused, among others, by the non-random choice of the first person and the subsequent and over-representation of members of large networks. Respondents with broad social networks may point to a larger number of similar people being surveyed and, as a consequence, certain groups may be over-represented and underestimated if they do not have a broad social network (Johnston & Sabin, 2010). Moreover, its limitation results from the fact that it can restrict the research participants only to those people who are willing to cooperate with the researcher, the most open (the so-called occurrence of self-selection of respondents) (Meyer & Wilson, 2009). There is a lack of control over the chain of respondents. The structure of the surveyed group may depend on the selection of the first contacts, which are sometimes called "gatekeepers" or "go-betweens". They select potential respondents and decide who to recommend for the survey (Cohen & Arieli, 2011; Groger, Mayberry, & Straker, 1999).

The snowball sampling has been used in the research of, among others, gang members (Patrick, 2013), drug users (Hendriks, Blanken, Adriaans & Hartnoll, 1992), prostitutes (McNamara, 1994), sexual minorities (Browne, 2005), homeless people (Dávid & Snijders, 2002), migrants (Adedeji, 2019; Bilsborrow, 2006). It can also

be used to survey populations operating in conflict regions (Cohen & Arieli, 2011; Taarup-Esbensen, 2017) and as a modification of expert sampling (May 2017, 2015). It has also been used to assess the economic exchange between villages in Ecuador (Jones, 2003).

1.2. Respondent Driven Sampling

Respondent Driven Sampling is successfully used to research communities that want to remain hidden but have social networks. It was developed by Douglas Heckathorn and used as part of the AIDS prevention program in the USA. It is a modification of the snowball sampling and is based on Markov chains (Heckathorn, 1997). The difference between the two methods is that in the case of RDS, the number of people that a respondent can recommend for research is limited (Semaan, 2010). The method is based on the respondent's network (Granovetter, 1976) and assumes that members of a surveyed community have better opportunities to reach further potential respondents than interviewers (researchers) (Heckathorn, Semaan, Broadhead, & Hughes, 2002). In the RDS method, the implementation of the survey is based mainly on the activity of respondents (they contact the researcher). Respondents do not need to identify further persons. The RDS uses a system of coupons that are received by respondents and passed on to the subsequent persons who they think are the target group. The coupons contain information necessary for the potential respondent to take part in the research, i.e. information about the research project, the place of the research, contact to the research team. Coupons must be numbered to allow the sample to be ordered (Hipp, Kohler, & Leumann, 2019). A recruiter receives a reward (usually financial) for participating in the research and for recruiting another person for the research. This is to encourage respondents to recruit more people through their social network (Crawford, Wu, & Heimer, 2018). The recruitment process continues until the desired sample size is reached. Data collected using the RDS method can be used to infer the structure of social networks, which can then be used to estimate the population (Bagheri & Saadati, 2019; Salganik & Heckathorn, 2004).

The RDS method was used, among others, in the survey of jazz musicians (Heckathorn & Jeffri, 2001), drug addicts (Heckathorn et al., 2002), (Lisa G Johnston, Chen, Silva-Santisteban, & Raymond, 2013; Van Baelen, Plettinckx, Antoine, & Gremeaux, 2020), homosexuals (Khatib et al., 2017; Michaels, Pineau, Reimer, Ganesh, & Dennis, 2019), carriers of infectious diseases (Raymond et al., 2019), people taking the ecstasy pill (Wang et al., 2005), prostitutes (Simic et al., 2006; Carrillo, Rivera, & Braunstein, 2020; Hakim et al., 2020; Lisa Grazina Johnston, Sabin, Hien, & Huong, 2006) the homeless (Dankova, Bernard, & Vasat, 2019), women undergoing abortion (Gerdts et al., 2019), as well as among young people to estimate the risk associated with their participation in a car accident (Oscos-Sanchez et al., 2019).

The RDS method is quite strongly linked to one geographical location (usually the city and its surroundings) (Schonlau, Weidmer, & Kapteyn, 2014). As a rule, it is used to recruit respondents in a specific city or its immediate vicinity due to the use of social networks. If it is used in a larger area, e.g. at national level, the RDS can be implemented for the recruitment of respondents online (online surveys) (Wejnert & Heckathorn, 2008). An example is a survey conducted in the USA based on the American Life Panel (Schonlau et al., 2014). A nationwide but also web-based RDS survey was conducted in Vietnam among homosexual men (Bengtsson et al., 2012). WebRDS is also recommended for research on multiple migrants (Salamońska & Czeranowska, 2018).

The implementation of face-to-face RDS in areas larger than a city is rare. One such example is research carried out in 25 villages in Uganda, which were dispersed within a radius of 38 km. A facilitation of the implementation of this method in the case of the Ugandan survey was that the households in the area covered by the survey were known because they undergo a census every year (McCreesh et al., 2012). Researchers had basic knowledge about the analysed population, so it was not hidden.

1.3. Comparison of snowball sampling and RDS and their use in research on migrants

Both sampling methods, i.e. snowball sampling and RDS, are based on respondents' social networks. They may seem quite similar, but they differ in several elements, which are listed in Table 1.

Snowball sampling allows more interference from the researcher, who can search for further individuals when the recruitment process is not driven by itself. Moreover, in the snowball sampling method, there is no restriction concerning persons that can be recommended by the respondent for the survey, whereas RDS introduces such restrictions (to avoid over-representation of certain groups). In the RDS method, a system of coupons is used in order to be able to easily monitor the recruitment process and avoid the introduction of more respondents than the accepted number, and which allows the recommended persons to participate in the research (thanks to them, the respondent does not have to give researchers the identity, contacts to the next person, which is required for snowball sampling). In the case of the snowball sampling, a limitation in the number of peers is not required. Using the RDS method, the relationship between recruiters and recruits is documented, which makes it possible to collect information about the personal network of each respondent (Magnani, Sabin, Saidel, & Heckathorn, 2005). There is no such requirement in snowball sampling. In addition, the RDS method uses a dual incentive system, which is an integral part of the method – to encourage respondents to participate in the survey and recommend more people. In snowball sampling, respondents may be paid, but this is not required. Recruitment of RDS respondents for face-to-face

Table 1

Comparison of snowball sampling and Respondent Driven Sampling

Snowball sampling	Respondent Driven Sampling
Recruitment of respondents for research is based on social networks of subsequent respondents, but also the interviewer's activity in acquiring new respondents. The effort put in to recruit respondents is part of the interviewers' working time.	Recruitment of respondents for research is based only on social networks of subsequent respondents.
Respondents must provide the identity (contact) of peers they recommend to participate in the study.	Respondents are not asked to identify peers for the investigator only to recruit them, which is less threatening to privacy.
No limit in the number of individuals that participants can recruit from their social network.	Limit in the number of individuals that participants can recruit from their social network.
No coupon system.	System of coupons is an integral part of the method.
There is no requirement to document the relationship between respondents.	The relationship between recruiters and recruits is documented.
Incentives for respondents are not required.	Incentives for respondents are an integral part of the method.
Incentives for recommending another respondent (referral incentive) are not required.	Incentives for recommending another respondent are an integral part of the method.
Recruitment of respondents for face-to-face surveys is not limited to one geographical area.	Recruitment of respondents for face-to-face surveys is limited to a specific (usually not very extensive) geographical area (most often a city or agglomeration).
It is not necessary to rent a room for conducting the research, because the interviews take place in different places (often indicated by the respondent).	It is necessary to rent a room/rooms for conducting the research, because the interviews take place in one (or a few) place(s).
Non-random sampling.	Approximate random sampling.

Source: own elaboration based on literature review.

research is usually limited to a specific (usually not very extensive) geographical area (usually a city or an agglomeration) because interviews take place in one place. In the case of snowball sampling there is no such limitation because surveys take place in the field, usually in the place indicated by the respondent.

Snowball sampling is more commonly used to survey migrants (Adedeji, 2019; Bilsborrow, 2006). However, the RDS is increasingly used to survey this group (Gorny & Napierała, 2016; Mühlau, Kaliszewska, & Röder, 2011) because migration is a very network-dependent process (Kalter, 2011; Tyldum & Johnston, 2014). New migrants are linked to people who are already in the country of immigration and benefit from their information on, inter alia, job opportunities, finding housing and emotional support (Friberg & Horst, 2014). At the same time, many migrants stay in the country of immigration illegally or work without the required documents, thus avoiding contact with people they do not know, and are much less willing to take part in surveys (Agadjanian & Zotova, 2012). Networking favours the implementation of the RDS method in immigration countries. It has been used to examine, among others, refugees (Abbasi-Kangevari, Amin, & Kolahi, 2020; Liu, McCann, Lewis-Michl, & Hwang, 2018; Weinmann et al., 2019) and internal migrants (Lattof, 2018; Qiu et al., 2012; Yang et al., 2020). It has also been used also to survey homeless Romanians in Oslo, Stockholm and Copenhagen (Djuve et al, 2015). However, the RDS, as the survey shows, does not necessarily work in sending countries (Friberg & Horst, 2014). It is noted in the literature that RDS methodology must be implemented with close monitoring of how the recruitment process develops. It provides an opportunity to get data on migrant groups to better understand the causes and consequences of their mobility. However, the quality of the data obtained with the RDS method may also depend on the response of the population to recruitment (Tyldum, 2020).

The RDS is still relatively new in research on migrants, including in particular research on migrants working in senior care. In this sphere, snowball sampling is mainly used (e.g Di Rosa et al., 2012; McGregor, 2007). According to the author's knowledge, the survey using the RDS method among migrants working as carers for older people has only been conducted in Berlin. It was limited to one city and one group of migrants: Poles working in 24-hour senior care (Hipp et al., 2019).

In Poland research among migrants where the RDS method is used has been conducted in large cities, mainly in Warsaw. Studies have usually focused on a wide group of migrants, for example Ukrainians, not necessarily from a specific social network. Moreover, they have been carried out in a relatively well-connected areas like Warsaw metropolitan area (Górny, Torunczyk-Ruiz, 2011). The studies conducted in Poland have compared the effectiveness of RDS and quota sampling (Napierła, Górny, 2013), while research of migrants from different locations have been carried out using webRDS (Salamońska, Czeranowska, 2018).

The literature review shows that there is a gap in the literature on the use of RDS in larger geographical areas, for example, such as a whole region. There is also a lack of comparative research on the same group that would show the effectiveness of snowball sampling and RDS.

Design of the study

The aim of the research was to compare the effectiveness of the use of snowball sampling and RDS in the research of migrants working in the elderly care sector and to increase knowledge about the methodology of researching labour immigration in the elderly care sector. The research was carried out in the Opolskie Voivodeship (between December 2017 – May 2018), which is the smallest region of Poland (in terms of territory and population). It is located on the periphery of the country and its residents have had many years of migration experience (Heffner, Klemens, & Solga, 2019). One of the consequences of foreign economic migration of the region's inhabitants is a high percentage of older people living alone. There is also a growing number of transnational families where the care of children living abroad is reduced to financial aid – sent directly to the parent or persons caring for him or her (Krzyżowski & Mucha, 2012). The effect of these changes is an increase in demand for care services for seniors (Keryk, 2010; Zagórowska & Rostropowicz-Miśko, 2016). Due to the small territorial area of the voivodeship (just over 9.4 thousand square kilometres, about 980 thousand inhabitants) and the demand for senior care services in towns as well as villages, it was decided to include the whole region in the survey.

As already mentioned in the introduction, a survey of immigrants working in elderly care is a huge challenge for several reasons: (1) it is a double-hidden population – foreigners and the families employing them are unwilling to reveal their presence due to the illegal nature of work; (2) it is a rare population (sparse) – work in senior care is not of a mass nature; (3) residing in the country of immigration periodically (temporary migrants, often with short stays); (4) "closed" population, i.e. persons providing 24-hour care for a senior suffering from serious illnesses (dementia, bed-ridden)) have very limited possibilities of leaving home (5) in Poland the phenomenon of employing migrants in senior care is almost unexplored, so it is a completely new area of study for researchers (there are no estimates available to show the scale and nature of this phenomenon) (Kałuża-Kopias, 2018; Kubiciel-Lodzińska, 2019; Sobiesiak-Penszko, 2015).

Due to the structure of the inflow of foreigners to Poland, it was assumed that the majority of respondents would be citizens of Ukraine (Jaroszewicz, 2018). Earlier studies have confirmed that Ukrainians working in Poland have social networks (Górny et al. 2010). It was therefore assumed that there would be a requirement for using snowball sampling and RDS, i.e. the existence of social networks.

The research project was based on the implementation of 40 direct individual semi-structured in-depth interviews with migrants working in senior care. In order to qualify for the survey, the respondent had to meet the following criteria: (1) be a foreigner, be living permanently or temporarily in Poland; (2) work legally or illegally as a carer of an elderly person (this person could provide services 24 hours a day or

Table 2

Comparison of the application of snowball sampling and RDS

Snowball sampling	Respondent Driven Sampling
Recruitment of respondents is based on networks of respondents, but also on the interviewer's activity in acquiring new respondents.	Recruitment only takes place by using the migrant's network.
There are no incentives for participating in the study and recruitment of peers.	There are incentives for participating in the study (50 PLN/ 12 EURO) and for referring another person (referral incentive) (30 PLN/ 6,7 EURO).
No restrictions in the number of recommended persons.	The respondent can recruit a maximum of 2 persons.
Recruits cannot attempt to recruit their recruiters.	Recruits cannot attempt to recruit their recruiters.
Interviews are conducted in the place indicated by the respondent (the interviewer goes to the respondent).	Interviews are conducted in one place indicated by the research team (respondents go to the interviewer).

Source: own elaboration.

periodically); (3) work in public institutions for senior citizens or provide services in private homes.

Sampling took place in two groups: the first group was identified using snowball sampling (the target was to recruit 20 respondents), while the second group was recruited using the RDS (the target was to recruit 20 respondents). The aim of using of two different sampling methods was to compare, among others, the duration of the survey, socio-demographic diversity of samples, and difficulties related to each sampling method.

A comparison of the assumptions underpinning the application of both methods of sampling in the conducted research are presented in Table 2.

In the group based on snowball sampling it was assumed that: the identification of respondents would be based on the social networks thereof, but the interviewer's activity in attracting subsequent respondents would also be allowed; the respondent would not receive remuneration for participation in the research and for recommending another person; there would be no restrictions in the number of recommended persons; interviews would take place in a place indicated by the respondent. In turn, in the group using the RDS method, it was assumed that respondents would be recruited only using migrant networks; the respondent would receive remuneration for participation in the research (incentive) and for recommending another person

(referral incentive); the respondent may recommend a maximum of two more persons; interviews would be conducted in one place indicated by researchers.

Two independent research teams joined the research: a 3-person team using the snowball sampling and a 2-person team using RDS. Among the interviewers were women and men of different ages, but with experience in field research and with knowledge of senior care (i.e. taking care of older parents, grandparents). The latter factor was considered important because in the case of hard-to-reach groups, it is crucial for interviewers to "know what they are talking about" (Hendriks et al., 1992). In both groups interviewers were Polish-speaking (in each group one person also spoke Russian) and used the same semi-structured interview questionnaire. Questions in the questionnaire concerned, among others, socio-demographic characteristics of the migrant, working time in Poland, conditions of employment and residence, residence plans. Before starting the research, the interviewers were trained. Differences between the two methods were discussed, the necessity of overcoming the respondents' distrust and possible language difficulties were indicated. Interviewers were also instructed on how to collect data through recruitment, barriers they may encounter during the implementation of the research project and comments made by respondents. Both surveys were conducted simultaneously. It was assumed that in both groups the survey would start with three initial seeds.

In the survey, 42 migrants (two more than assumed) were recruited in both groups – 31 women and 11 men. Almost all of them – 39 people – came from Ukraine, two from Belarus and one from Russia. The general characteristics of the surveyed group are given in Table 3, while the *Findings and Discussion* section shows the socio-demographic differences of the surveyed group considering the sampling method.

Table 3

General characteristics of the respondents

Respondent characteristics		Number of Respondents
Gender	Female	31
	Male	11
Legal status	Legal	17
	Illegal	25
Country of origin	Ukraine	39
	Other	3
Housing situation	Living-in	18
	Living-out	24
Education	Low skilled	16
	High skilled	26

Source: own elaboration.

The youngest person in the surveyed group was 18 and the oldest 57. The majority (25 people) worked illegally, and only 17 had contracts of different nature (employment, contract of mandate, contract of specific work). One of the respondents was self-employed. A significant share of respondents (60%) were recorded to have higher education. In the surveyed group there were more people (24 respondents) who rented a flat on their own and provided care work on an hourly basis (the so-called living-out), the remaining ones (18 respondents) were people living with their charges (the so-called living-in) (Gallotti, 2009). The researchers' intention was to reach out to those working in both private and public care homes, however it was ultimately not possible to recruit those working in the latter.

Further, the interviews were conducted in Polish, as all respondents spoke Polish at communicative level. On average, the interview took about 45 minutes. It is worth noting that interviews were entirely face-to-face, which in the case of migrants employed in senior services is not always possible. Researchers in Berlin conducting a survey using RDS, due to the lack of knowledge of the German language among respondents, used an online survey (only questions about the network were asked directly by researchers), which was filled in by respondents themselves. Therefore, it was not possible to conduct individual in-depth interviews or to control the answers provided, including actual verification of whether respondents belonged to the target group in the course of the survey (Hipp et al., 2019).

The MAXQDA programme was used to analyse the collected research material.

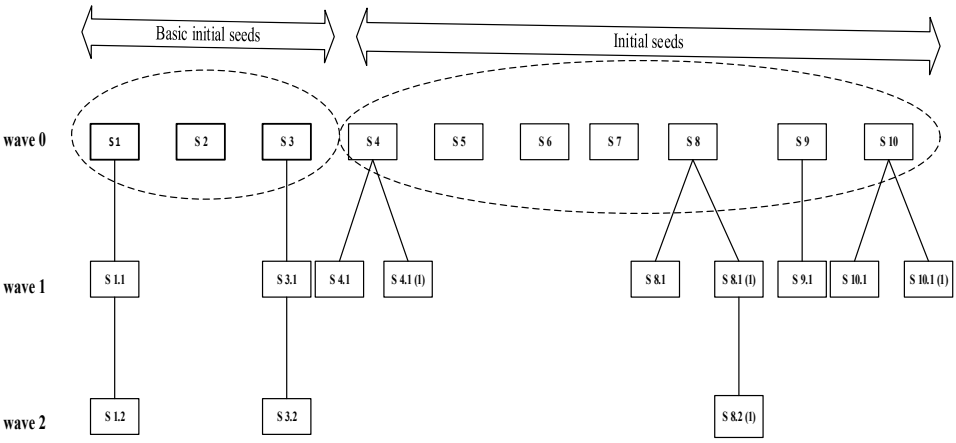
The procedure of sampling

Whether recruiting migrants using the snowball sampling or RDS, it was crucial to find the initial "seeds" who would initiate the survey. Their identification was a problem for both teams due to the lack of contacts with immigrants caring for the elderly. Migrants were sought in the following places and in the following way: through state/government institutions (departments issuing residence permits to foreigners), by so-called "friends of acquaintances", in places of residence of a large number of immigrants, advertisements (looking for people who advertised themselves as caretakers of the elderly, e.g. on the Internet), conversations with people who may have contact with the environment of foreigners caring for the elderly (nurses, physiotherapists, doctors, pharmacists, elderly people requiring care), as well as with the help of the so-called local leaders, people who know the community well. The most effective way to obtain the initial "seeds" in both recruiting groups turned out to be recommendations by so-called "friends of acquaintances", i.e. using private and professional contacts of interviewers from both research teams.

Chart 1 shows the recruitment chains in the snowball sampling survey. Wave 0 (respondents S 1 to S 10) was divided into two subgroups: basic initial seeds (the

Chart 1

Recruitment chains in snowball sampling survey



Source: Own elaboration.

first three respondents who were supposed to start the survey) and initial seeds are people recruited by the interviewers during the survey. Wave 1 consisted of 9 people, while wave 2 consisted of only 3 people. The longest chain in a group recruited by snowball sampling was three people.

In the group recruited by snowball sampling, which consisted of 22 people, there were 7 men and 15 women. In this category, 12 persons worked illegally and 10 legally (details in Table 4).

Table 4

Structure of the group recruited by snowball sampling

Code	Gender	Age	Education	Employment	Way of providing work	Period of stay / work in Poland at the time of the survey
S1	man	28	High-skilled	Illegal employment	Living-out	2 years
S 1.1	woman	49	High-skilled	Illegal employment	Living-in	3 years
S 1.2	man	30	High-skilled	Illegal employment	Living-in	2 years
S 2	woman	44	High-skilled	Legal employment	Living-in	5 years
S 3	woman	21	Low-skilled	Illegal employment	Living-out	1 year
S 3.1	man	32	High-skilled	Legal employment	Living-in	1 year
S 3.2	woman	22	Low-skilled	Illegal employment	Living-out	1 year

Table 4 cont.

Code	Gender	Age	Education	Employment	Way of providing work	Period of stay / work in Poland at the time of the survey
S 4	woman	57	Low-skilled	Illegal employment	Living-in	15 years
S 4.1	woman	43	Low-skilled	Illegal employment	Living-out	3 months
S 4.1(1)	man	63	High-skilled	Illegal employment	Living-out	11 years
S 5	woman	27	Low-skilled	Legal employment	Living-out	3 years
S 6	man	32	High-skilled	Legal employment	Living-out	6 years
S 7	woman	39	Low-skilled	Legal employment	Living-out	3 years
S 8	woman	26	High-skilled	Legal employment	Living-in	2 years
S 8.1	man	27	High-skilled	Legal employment	Living-in	3 years
S 8.1(1)	woman	24	High-skilled	Legal employment	Living-in	1 year
S 8.2(1)	woman	20	High-skilled	Legal employment	Living-out	1 year
S 9	woman	34	High-skilled	Legal employment	Living-out	9 years
S 9.1	woman	34	Low-skilled	Illegal employment	Living-out	6 months
S 10	man	30	High-skilled	Illegal employment	Living-in	4 months
S 10.1	woman	28	High-skilled	Illegal employment	Living-in	5 months
S10.1(1)	woman	20	Low-skilled	Illegal employment	Living-out	1 year

Source: Own elaboration.

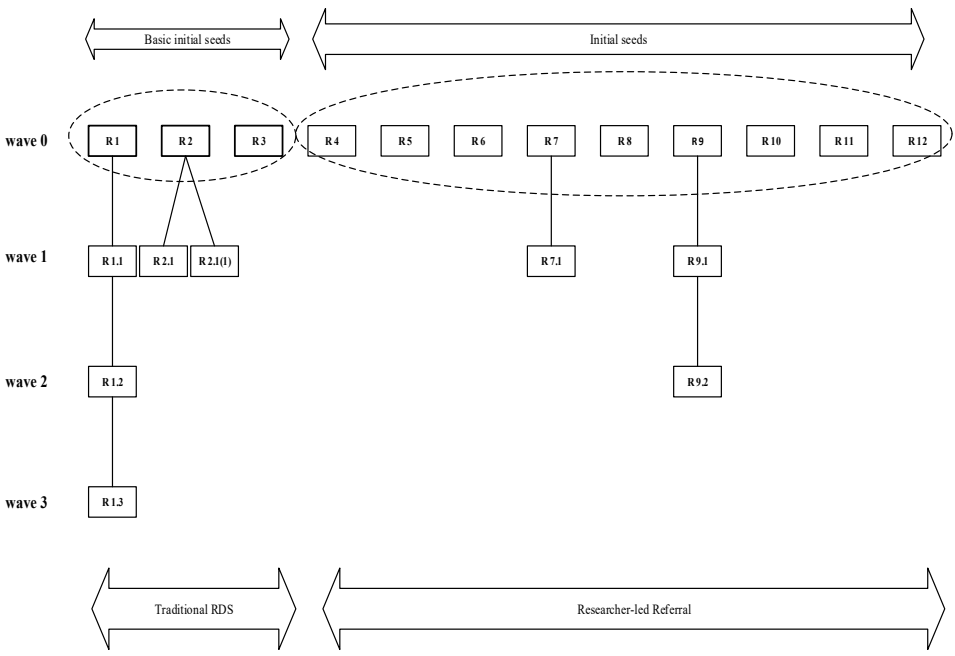
The "seeds" that allowed contact with other people were mainly respondents working illegally (S 1, S 3, S 4, S 10). Respondents working legally: S 2, S 5, S 6, S 7 did not indicate any contact to further persons who might take part in the survey. The only legally employed respondents who contacted subsequent persons were respondents S 8 and S 9. It is worth noting that they indicated only those working legally. Thus, it can be seen that respondents in the snowball sampling group rather recruited people of the same – legal or illegal – nature of employment. The average length of stay in Poland of respondents who belonged to the first recruited wave (1) was 4.6 years. On the other hand, the average length of stay of respondents who indicated subsequent "seeds" for the survey and took part in it was 3.8 years. These were therefore persons staying in Poland for a relatively short period of time, i.e. they may not have a well-developed network of contacts, which makes it difficult to carry out research that is based on the respondent's chain of connections. This confirms the research difficulties assumed at the beginning.

In the second group, using RDS, it was assumed that the recruitment of respondents after the first three "seeds" were identified (basic initial seeds) would take place spontaneously through respondents and the people they recommended. It was agreed that each respondent may nominate a maximum of two persons for the survey to avoid over-representation of certain groups. In the research, according to the RDS methodology, a double incentive system was applied (PLN 50 for the respondent for giving an interview and PLN 30 for undertaking the survey by a recommended person).

The process of recruitment of respondents by basic initial seeds was completed quite quickly. The first respondent R 1 ("seed") identified one person (R 1.1) who took part in the survey and identified another one (R 1.2) and another one (R 1.3). The second (R 2) recommended two persons (R 2.1 and R 2.1(1)) to be surveyed. Unfortunately, these respondents did not recommend any more people. The third surveyed person from wave 0 (R 3) did not identify any individual who could be included in the survey – the recruitment process had been interrupted. After a month of unsuccessful expectations for migrant applications, when it was noticed that it would not be possible to increase the number of respondents using only a directly controlled selection, the research team decided to change the recruitment strategy

Chart 2

Recruitment chains in the RDS survey



Source: Own elaboration.

Table 5

Structure of the group recruited by the traditional RDS and Researcher-led Referral

Method	Code	Gender	Age	Education	Employment	Way of providing work	Period of stay / work in Poland at the time of the survey
Traditional RDS	R 1	man	51	High-skilled	Illegal employment	Living-out	3 years
	R 1.1	woman	27	High-skilled	Illegal employment	Living-out	3 years
	R 1.2	woman	37	Low-skilled	Illegal employment	Living-out	3 years
	R 1.3	woman	25	Low-skilled	Legal employment	Living-in	2 years
	R 2	woman	18	Low-skilled	Illegal employment	Living-out	1 year
	R 2.1	woman	20	Low-skilled	Legal employment	Living-out	2 years
	R 2.1(1)	woman	18	Low-skilled	Illegal employment	Living-out	3 months
	R 3	woman	58	Low-skilled	Illegal employment	Living-out	5 years
Researcher-led Referral	R 4	man	30	Low-skilled	Legal employment	Living-in	1 year
	R 5	woman	30	High-skilled	Illegal employment	Living-out	5 months
	R 6	woman	49	High-skilled	Legal employment	Living-in	2 years
	R 7	woman	34	High-skilled	Legal employment	Living-in	1 year
	R 7.1	man	35	Low-skilled	Illegal employment	Living-in	6 months
	R 8	woman	41	High-skilled	Illegal employment	Living-in	6 months
	R 9	man	27	High-skilled	Illegal employment	Living-out	6 months
	R 9.1	woman	25	High-skilled	Illegal employment	Living-out	4 years
	R 9.2	woman	27	High-skilled	Illegal employment	Living-in	2 years
	R 10	woman	34	High-skilled	Illegal employment	Living-out	1 year
	R 11	woman	30	High-skilled	Illegal employment	Living-out	1 year
	R 12	woman	36	High-skilled	Legal employment	Living-in	6 months

Source: Own elaboration.

and move away from the classic RDS. Otherwise, a survey using the RDS method without additional interference, based solely on basic initial seeds, would have been completed with 8 interviews. A researcher-led referral selection of respondents was introduced until the set number of interviews was obtained. A similar procedure was used in a survey of new migrants in London (Platt, Luthra, & Frere-Smith, 2015).

The research team also decided to make one more modification – not to conduct interviews in one place only. The interviewer, if the implementation of the survey depended on it, met with the respondent in the place indicated by him/her, so that the respondent did not waste time on travelling. Such a modification was also decided in the survey of migrants conducted in London (Platt et al., 2015). The remuneration system established at the beginning of the research was maintained.

Among the twenty recruited people there were four men and 16 women. Eight respondents lived with their charges and twelve lived separately. Only 6 people in the surveyed group worked legally, while the others were employed illegally (details in Table 5).

In the surveyed group, the "seeds" that allowed contact with other respondents were mainly those working illegally (R 1, R 2, R 9), similarly to the group recruited by snowball sampling. This was most likely due to their larger number, but a precise determination of causes would have to be investigated. Respondents who were the "first seeds" working legally were unlikely to be able to contact other respondents (R 4, R 6, R 12). The only exception was respondent R 7, who enabled contact with another person (R 7.1). Relationships between respondents and persons recommended by them were also analysed, and in the researched group everyone indicated that they were "friends" (there were no family or other connections between the respondents). The average length of stay in Poland of respondents who belonged to the first recruited wave (0) was 1.4 years. On the other hand, the average length of stay in Poland of persons who indicated subsequent migrants for the survey is 2.2 years. Accordingly, these were people who stayed in Poland for a short period of time, which could also affect the result of the survey and the inability of the respondents to "fuel" it.

Findings and discussion

Duration of the survey

The identification of migrants working in senior care proved to be a huge challenge. Despite the fact that the search for the first respondents was extensive in order to increase the probability of reaching different "seeds", among others, using offices, local authorities, community nurses, the Internet, it was a very time-consuming process. The difficulty of reaching this group is also confirmed by a survey conducted in Berlin among senior carers using the RDS method, where as a consequence of re-

cruitment problems, it has been decided to reduce the surveyed group by half (Hipp et al., 2019). Ultimately, both methods, i.e. snowball sampling and RDS allowed to reach the set number of immigrants caring for the elderly outlined in the project, but at different times.

In the conducted survey, the snowball sampling method made it possible to find and reach the required number of respondents more quickly. Snowball sampling interviews lasted about 4 months. More people than expected, namely 22, were recruited using this method. It required the involvement of 3 interviewers. In the case of snowball sampling, no costs were incurred in relation to the remuneration of respondents and their recommendations. Moreover, the time of the survey was relatively shorter than in the case of RDS because it depended, among other things, on the activity of interviewers to gather more people for the survey. They were the active party and contacted persons indicated by respondents and searched for them through their private and professional contacts until the assumed number of people was reached.

In turn, 20 RDS interviews took about 5 months to complete. Initially, two interviewers were involved in the work, who recruited the first three respondents to the so-called basic initial seeds (wave 0). The cost of using the incentive scheme was incurred (a total of over PLN 1200, i.e. about EUR 285) in applying the RDS method. In addition, compared to snowball sampling, the time of the survey was longer, which was due to the need to wait for the next respondents to use coupons provided by recruited migrants and establish contact with the research team. Based on the traditional application of the RDS method, which was fully based on recommendations of the first three people (basic initial seeds), only 5 respondents could be obtained. It turned out to be necessary to "control" the survey by interviewers in order to continue its implementation. The need to search for more "seeds" resulted in the recruitment of a third person to the interviewer team. Ultimately it turned out that increasing the number of "seeds" from 3 to 12 and modifying the method from traditional RDS to Researcher-led Referral did not "fuel" the recruitment process. It was similar in the research of sexual orientation in the American Army, where the number of seeds was raised from 5 to 189 and it also did not bring the intended result (Rostker et al., 2010).

In the conducted research, an important factor hindering the recruitment of respondents based on the traditional RDS method was the distance they had to cover to the indicated research location. For migrants it turned out to be a problem to get to the place where the interviews were held (a university in Opole) from suburban areas or other smaller towns. This was due to, among other things, poor public transport, and the need to devote a relatively large amount of time to reach the interviewer. For example, a respondent from Strzelce Opolskie had to travel about 40 km using public transport to reach the indicated research location, which was set in Opole. The time of the suburban bus ride is about 50 minutes one way and the cost of the ticket is 7 PLN. In addition, the respondent had to spend about 20 minutes to get from the bus station to the research location. Time to participate in

Table 6

Duration and effort to obtain the sample: comparison snowball sampling and RDS

Factor	Snowball sampling	RDS
Duration of recruitment of the established group of respondents	4 months	5 months
Tasks of interviewers	The interviewers were active. They contacted respondents indicated by migrants and sought new people on their own. They carried out interviews in places indicated by migrants.	**Traditional RDS** Passive interviewers whose role was to recruit the first 3 "seeds". After the coupons were forwarded, they waited for further respondents to contact. Interviews were carried out in one place and the respondent had to make an appointment and reach it. **Researcher-led Referral** Active interviewers contacted respondents indicated by migrants, looked for new respondents on their own. They carried out interviews in places indicated by migrants.
Number of interviewers	3 persons	2 persons (during the research, when the Researcher-led Referral modification was used one additional person was employed)

Source: Own elaboration.

the interview took another 60 minutes. Then she had to wait about 45 minutes at the bus stop for the bus to arrive (public transport between the towns in the Opole region is quite poor and buses run rarely; often at 1–2 hour intervals). The estimated time of participation in the survey along with commuting and waiting for the bus at the bus stop was about 4.5 hours. Many of the potential respondents could not afford to leave their charges for so long.

An important factor in the success of the recruitment process using the snowball sampling were the interviewers who contacted people that were recommended by other respondents. They encouraged them to participate in the survey, often in phone conversations they explained the purpose of the survey, explained doubts, tried to gain trust. Moreover, they adapted to expectations of migrants regarding the time and place of the survey. Therefore, they managed to acquire the assumed number of respondents in a shorter period of time than the group recruiting with the RDS method, and even slightly exceeded it.

In the group using the traditional RDS, the role of interviewers was to recruit only the first 3 respondents, then the sample selection was to be driven by migrants' networks. Unfortunately, even with a double incentive system, recruitment did not drive itself. Therefore, the research team decided to modify the method and apply Researcher-led Referral. Moreover, they decided to abandon the research only in one place and introduced the possibility of meeting with the respondent at a point designated by him or her (if participation in the research depended on it). The introduction of this change supported the research process and achieved the assumed number of interviews.

The following methodological conclusion can be drawn from the concluded studies. In the implementation of research among hidden communities with a specific profile (rare), which are scattered (e.g. in an area larger than the city), with difficulty in moving from one point to another (lack of transport or poor public transport), better results (faster, more effective recruitment of respondents) can be achieved by using the snowball sampling method, as it assumes greater interference of interviewers in the recruitment process and the implementation of research in the place indicated by respondents. If the RDS method is used, it would be proposed to modify it by introducing the possibility of travelling to the respondent (if he made his participation in the survey dependent on it). A similar change was decided during a survey of new migrants in London, during which the interview took place in the location indicated by the respondents, so that they did not have to travel to the place of the interview. Migrants, especially temporary migrants, are often very busy and work many hours. They have little free time which they could possibly spend on participating in the survey (Platt et al., 2015). The proposed modification would continue, in line with the RDS, to maintain the principle of being able to identify a limited number of respondents (to avoid over-representation of certain groups). Although, as the survey has shown, this restriction has not been de facto used. Consideration could also be given to increasing the number of places where the research takes place (e.g. in several of the region's larger cities with larger migrant communities).

Diversity of the sample

Comparing the diversity of both attempts, it can be concluded that in the group recruited by the snowball sampling method there were more men in comparison to the group obtained by the RDS method (and its subsequent modification). The average age in the group recruited by snowball sampling was 33.2, in RDS – 32.6 years. This shows that in the surveyed group migrants working in senior care are rather young people. Among respondents recruited by the snowball sampling method, there were more people working legally. In the group recruited using the snowball sampling method, the average time of stay in Poland was 3.3 years, whereas among respon-

dents recruited using RDS it was 1.7 years. Respondents recruited based on RDS are relatively new migrants who may not have had extensive networks. This is one of factors that may have hindered the implementation of the method, as was also shown by surveys carried out in London (Platt et al., 2015).

Based on the research carried out, it is difficult to explain the quite significant difference in the length of stay in both groups. This may have been influenced by several factors including, in the case of snowball sampling, greater penetration of rural areas, where more "spotted" migrants may be present. The "new" migrants are mainly coming to cities where it is easier to get employment (Lerch, 2017). The survey found that respondents working illegally indicated another person for research more often (this concerned both RDS and snowball sampling). This may be due to the fact that there were more people working illegally in both groups.

Table 7

Diversity of the sample

Respondent characteristics		Snowball sampling	RDS
Gender	Female	15 (68,2%)	16 (80%)
	Male	7 (31,8%)	4 (20%)
Age	Youngest respondent	20 years	18 years
	Oldest respondent	63 years	58 years
	The average age	33,2 years	32,6 years
Legal status	Legal	10 (45,5%)	6 (30%)
	Illegal	12 (54,5%)	14 (70%)
Education	High skilled	14 (63,6%)	12 (60%)
	Low skilled	8 (36,4%)	8 (40%)
Duration of stay in Poland	The average duration of stay in Poland	3,3 years	1,7 years
	Duration of stay of the initial respondents	4,6 years	1,4 years
	Duration of stay of respondents who have referred another person	3,8 years	2,2 years
	Duration of stay of respondents working legally	3,1 years	1,6 years
	Duration of stay of respondents working illegally	3,4 years	1,7 years

Source: Own elaboration.

In both groups, the recommendation rates (understood as the ratio of the number of respondents from wave 0 to the number of participants from wave 1 and 2) were not high and it was necessary to recruit more "seeds". The recommendation rate in the snowball sampling group was 1.2 and in the RDS group 0.67. Based on the survey, it is difficult to clearly determine whether these differences were due to the method used to reach respondents or whether they were not caused by basic initial seeds and initial seeds. The selection of the first respondents may influence the course of the survey (Magnani et al., 2005).

Research difficulties

Despite the relatively large area covered by the survey (the whole region), researchers in both groups had considerable problems in obtaining information about migrants working in senior care. It was difficult not only to determine where such people were residing/ working, but also to convince them to take part in the survey. It has been confirmed that migrants working in senior care are a population that can be described as "doubly" hidden. It was not only the migrants who cared about staying invisible, but also the families and the immediate surroundings that employed them. This was particularly visible in villages, where the so-called local authorities (e.g. mayors) did not want to indicate specific places (families) where migrants work, fearing that this information would be used to the detriment of those employing foreigners. The willingness to protect members of the local community, which in the vast majority of cases benefits from illegal employment of foreigners, was quite evident.

When preparing the survey, it was believed that the RDS recruitment process would be facilitated by a dual system of financial incentives, which is an integral part of the method. The remuneration amounted to PLN 50 net (EUR 12) for participation in the survey and PLN 30 net (EUR 6.7) for the referral. In the period of the survey, the minimum wage per hour of work in Poland was PLN 13 gross (about EUR 3). It was therefore considered that amounts set out in the survey would be attractive to immigrants. The remuneration for participation in the survey depends on the remuneration in a given country (Gile, Johnston, & Salganik, 2015). Financial incentives that are too low are not an encouraging factor to take part in the survey (Bauermeister et al., 2012) while incentives that are too high may encourage respondents to not tell the truth in order to obtain an attractive income (Johnston & Sabin, 2010). Some of the respondents in this group declared that they know migrants working in senior care and expressed their willingness to recruit such a person, but only 5 people could be recruited in this way. Initially, it was thought that an unsatisfactory result may be due to the fact that the remuneration for participation in the survey was not a sufficient incentive for respondents to devote their time to get to the place of the survey. However, even the introduction of a modification consisting

in reaching interviewers in places designated by respondents (so that they do not incur travel costs and do not waste time to travel to participate in the survey) and the maintenance of the remuneration system for both participation in the survey and recommending more people did not "fuel" recruitment. It can therefore be concluded that it was not low remuneration that was the factor "blocking" the recruitment chain.

It seems that in the survey, the key factor hindering the identification of immigrants providing senior care services both by snowball sampling and RDS was the structure of the social networks of the migrants, which only to a small extent covered the population covered by the survey (i.e. foreigners working in senior care). It should be stressed that respondents from both groups were quite new migrants, who may not have built sufficient networks to carry out such a detailed survey on their basis. Although respondents had quite broad networks of contacts, there were few people in their group of acquaintances who worked in senior care.

The following strengths and weaknesses of both methods can be indicated when they are used in studies of migrants working in senior care (table 8)

Table 8

The strengths and weaknesses of using snowball sampling and RDS to study migrants working in elderly care

	Strengths	Weaknesses
Snowball sampling	Recruitment of respondents is based on networks of respondents, but also on the interviewer's activity in acquiring new respondents. No need to waste time waiting for contact from the respondent.	More interviewers are needed.
	Interviews are conducted in the place indicated by the respondent (the interviewer goes to the respondent).	Costs related to travel to respondents.
	It enables the use not only of contacts obtained from migrants, but also from other entities (e.g. institutions dealing with migrants, local authorities, etc.).	The success of the study depends heavily on the network of contacts the interviewers have.
RDS	Less interviewers are needed	Basic RDS only allows for recruitment to take place by using the migrant's network. Time is wasted waiting for the respondent to contact the researcher.

Table 8 cont.

	Strengths	Weaknesses
	Interviews are conducted in an indicated place (it is easier to organize the research).	It can also be a weakness because it makes it impossible for those who cannot come to participate in the study. The respondent himself/herself has to come to the place where the research is carried out, which in the case of research in a poorly connected area is a big obstacle.
		Difficult to apply in narrowly defined groups of migrants (it is difficult for them to recommend someone with a desired profile).
		Difficult to apply to groups of migrants staying in the country of immigration for a relatively short time.
		Hard to use for face-to-face research among migrants in a larger area than the city.

Source: Own elaboration.

Conclusions

The subject of the research was to compare the effectiveness of snowball sampling and RDS to surveys of migrants working in elderly care. The study complements the knowledge on the use of RDS for recruitment in hidden, rare, scattered populations larger than a city or agglomeration, e.g. a region for face-to-face research.

In the survey, both methods were not 'driven' by migrant networks. The groups of respondents could only be obtained due to additional recruitment conducted by interviewers. The snowball sampling made it possible to reach the set number of respondents faster, which was mainly due to a more active participation of the team of interviewers in obtaining people for the research.

In both groups respondents differed in socio-demographic terms. However, based on the conducted survey, it is difficult to conclude whether these differences resulted from the applied method of sampling or whether they were not caused by the basic initial seeds and initial seeds. This issue would require more in-depth research.

A huge challenge in implementing both sampling methods was to identify basic initial seeds. This confirmed that the implementation of surveys among migrants

working in elderly care is difficult due to limitations in access to respondents. This group is both hidden and rare, as the employment of migrants as senior carers is not a mass phenomenon. It was extremely difficult to obtain a referral chain. The maximum chain in the group recruited by snowball sampling consisted of 3 waves and RDS consisted of 4 waves (including initial wave). In the case of the RDS method, the stimulator driving the recruitment process was not even a double incentive system. This may indicate that in the surveyed group the reason for difficulties in the implementation of the research was the network of migrants, in which there were too few people meeting the criteria of the survey (migrants working in senior care).

Based on the conducted research, the following conclusions can be drawn. The RDS can be used for face-to-face research among migrants in a larger area than the city, e.g. in the region, but under several conditions: (1) The researched group must have social networks in which people meeting the research objectives will be present (the population cannot be too small, rare, i.e. it would be easier to reach other migrants working in the region in general than migrants working only in senior care). (2) In order to intensify the recruitment process in an area larger than a city or an agglomeration, it is worthwhile to use a combination of methods used for sampling (Bonevski et al., 2014). It can be recommended to use a modification combining both methods, i.e. using snowball sampling, but limiting the people indicated by respondents to the survey, as in the case of RDS (to prevent over-representation of the most active groups). In addition, it is worth considering introducing a modification to the RDS, which will allow for travel to the respondent (who will contact the researcher on the basis of the coupon), if it is a condition for their participation in the survey. This will facilitate reaching those people who would not participate in the survey because they would not have the opportunity to reach the place where the interviews were conducted or would not want to devote their time to it (because the salary offered did not compensate for the time spent or the nature of the work would make it impossible to go out for several hours). (3) It is worth considering introducing the possibility of conducting a part of semi-structured interviews over the phone. It is now accepted that they are not inferior to face-to-face interviews. However, as the research proves, a phone call is less likely to provide contact to other respondents (Kirchherr & Charles, 2018). (4) The introduction of the webRDS method should be considered, as migrants use information technology.

The limitations of the research and the results were influenced by the fact that both groups were dominated by respondents with a relatively short stay in Poland. It was particularly visible in the group recruited by the RSD and its modification, in which relatively "new" migrants prevailed and those usually have less developed and diverse social networks (Friberg, 2012). Furthermore, it should be stressed that this was a preliminary survey to identify the phenomenon of economic immigration to the elderly care sector and to test the effectiveness of the use of snowball sampling and RDS in research on this group of migrants. The importance of the research and

application of the RDS method in the research of migrants using face-to-face techniques in the whole region should be emphasized even more.

In the course of further research on the use of the RDS method for the survey of migrants in senior care, work should be undertaken in particular to stimulate the recruitment process. More extensive future research is needed to improve the way the first seeds are selected to maximize the effectiveness of reaching subsequent respondents and to determine what affects the respondent's propensity to recommend peers. In addition, further research is required to refine the management of multiple data collection sites, staffing and to verify that respondents meet the criteria for inclusion in the research. A comparison of the effectiveness of monetary and non-cash incentives would be interesting in future research, especially among migrants. The latter, as shown by research among drug addicts in Russia, can also be effective (Broadhead et al., 2006). On the other hand, financial incentives are not a universal remedy to improve the recruitment process, because raising compensation does not always stimulate the research process (Platt et al., 2015). Of course, in the case of migrants, the question arises as to what could be attractive to them apart from money? Also, the possibility of using webRDS for research on migrants would require further research.

Migrants are a very important group from the point of view of the social policy of the state and individual regions (Brzozowski, Pędziwiatr, 2014). The determination of the size of the population employed in the care of the elderly may be crucial in planning long-term activities dedicated to seniors. Improving research methods, in particular the use of RDS, could allow the estimation of the size of the population of migrants, including those working in senior care. It could also be helpful in identifying the grey market in these services. It is therefore necessary to further develop and modify research methods to reach this increasingly important group of migrants and to provide opportunities for quantitative research of a representative nature.

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