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Improving access and continuity of care for homeless people: how could general practitioners effectively contribute? Results from a mixed study.

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Abstract

Objectives: To analyze the views of GPs about how they can provide care to HP and to explore which measures could influence their views.

Design: This study used a mixed-methods design (qualitative –> quantitative (cross-sectional observational) → qualitative). Qualitative data were collected through semi-structured interviews; quantitative data were collected through questionnaires with closed questions. Quantitative data were analyzed with descriptive statistical analyses on SPPS; a content analysis was applied on qualitative data.

Setting: primary care; views of urban general practitioners working in deprived area in Marseille were explored by questionnaires and/or semi-structured interview.

Participants: 19 GPs involved in HP's healthcare were recruited for phase 1 (qualitative); for phase 2 (quantitative), 150 "classic" GPs were randomized, 144 met the inclusion criteria, and 105 responded the questionnaire; for phase 3 (qualitative), data were explored on 14 "classic" GPs.

Results:
In quantitative phase, 79% of the 105 "classic" GPs had already treated HP. They have experienced the most difficulties when caring for HP about social questions (mean level of perceived difficulties = 3.95/5, IC95 [3.74-4.17]), lack of medical information (mn=3.78/5, IC95 [3.55-4.01]patient's compliance (mn=3.67/5, IC95 [3.45-3.89]), loneliness in practice (mn=3.45/5, IC95 [3.18-3.72]), and time required for doctor (mn=3.25, IC95 [3-3.5]. Qualitative analyses permitted to understand that maintaining a stable follow-up was a major condition for GPs to contribute effectively to the care of HP. Giving GPs the means to adapt their practice, acting on health system organization, developing a medical and psychosocial approach with closer relation with social workers, and enhancing collaboration between tailored and non-tailored programs also appeared as key answers.

Conclusion: GPs could contribute to improve the health of HP, if we adapted the conditions of their practice. These results will enable the construction of a new model of primary care organization to improve access to care for HP.

Key words:

General practitioners, Primary care, homelessness, homeless people, access to health care

Strengths and limitations of this study

Strengths and limitations of this study

- Using a mixed method with qualitative-quantitative-qualitative sequential design reinforced the validity of qualitative data and permitted deeper explanation of the quantitative data.
- Using a software (N-vivo) to perform the content analyses enhanced the rigor of the analyses.
- We obtained a high quantitative participation rate (73%), compared to other similar studies conducted on GPs.
- Qualitative analyses couldn't be triangulated: we considered this limit by validating the matrix on each significant step of their construction with director of this research; we also validated the first results on phase 1 by a meeting with interviewed GPs to obtain their feedback.
- During the quantitative phase, to satisfy our operational objectives, we selected only GPs working in the poorest areas of Marseille: extrapolation of our results should be limited to GPs working in urban area, in low income suburbs, and in countries with similar social policies as France.

I. Introduction

The number of homeless people increased by 50% between 2001 and 2012 in France (1), with a similar evolution in Europe during the same time frame (2). In 2012 in France, almost 900,000 people lacked personal housing, and almost 3,000,000 lived in poor-quality housing conditions (3). This situation continues to affect a growing number of households and young people (4). FEANTSA (European Federation of organizations working with the people who are homeless) has recently developed an European Typology of Homelessness and housing exclusion (ETHOS), to improve understanding and measurement of homelessness in Europe, and provide a common language for transnational exchanges on homelessness (5). This typology considers 4 operational categories of homelessness:

- Roofless: people living rough, or in emergency accommodations
- Houseless: people in homeless shelters or receiving longer-term support (due to homeless)
- Insecure: people living in insecure accommodations or under threat of eviction
- Inadequate: people living in temporary / non-conventional structures, in unfit housing, or under conditions of extreme overcrowding (6).

Given the increase of homelessness in recent years, improving the health and social conditions of the homeless has become a priority for European social politics (2,7); it is more important than ever to explore the effectiveness and feasibility of a scheme in which ambulatory GPs (family doctors) play a central role in primary care for the homeless. Indeed, homeless people have complex health care needs, accompanied by somatic, psychiatric and social troubles (8,9). These people suffer from higher morbidity (9–11) and earlier mortality compared to people with stable housing, with average age of death between 40 and 50 years (12,13) and standardized mortality ratios in high-income countries typically reported from 2 to 5 times the age-standardized general population (9).

They face difficulties in accessing primary care (14–16), and go through inadequate therapeutic itineraries, with multiple visits to emergency services (17–19). We know that GPs see a significant proportion of the homeless population : 84% of homeless people declared having consulted a GP within a year of a study led in France on 2001 (20); in a Canadian study, 43% of homeless people had a designated family doctor (21). Family doctors are generally viewed positively by precarious patients, which includes homeless people : they construct a confident relationship, and are seen as a support for these patients (22). However, GPs aren't identified by homeless people as the first person to turn to for medical assistance whenever they feel ill (23,24).

The debate between developing specialized structures for homeless people or adapting "non-specialized" general practice for homeless people has not yet been resolved (25). According to a recent literature review, primary health-care programs specifically tailored to homeless individuals might be more effective than standard primary health care (26). Such programs could also yield more appropriate care and give the homeless patient a better experience in their care (27). But tailored programs have many limits : these programs (particularly associative or humanitarian programs) have often insufficient resources to meet such high-level care needs (17); furthermore, such programs could reinforce the feeling of exclusion of the homeless, and enhance ghettoization of care for them (28).

It has been described that GPs felt multiple difficulties in caring for and ensuring continuity of care for precarious (29) or homeless patients (30). Most of the studies exploring views of GPs in France targeted precarious patients or migrants; they used mostly a descriptive approach (29,31,32) or targeted "specialized" or "involved" GPs (32,33).

We made the hypotheses that involving "non specialized" general practitioners could improve the health of the homeless, by permitting better access and continuity of care, and global and patient-centered care, if we can adapt their practice's conditions for homeless' care managing.

Our first objective was to analyze the views of GPs about how they can provide care to HP and to explore which measures could influence these views. Secondarily, we aimed to:

- Quantify the exposure of GPs working in poor area to homelessness,
- Describe the knowledge of GPs working in poor area about homelessness,
- Identify and quantify the difficulties and barriers that GPs face in taking care of homeless people.

II. Methods

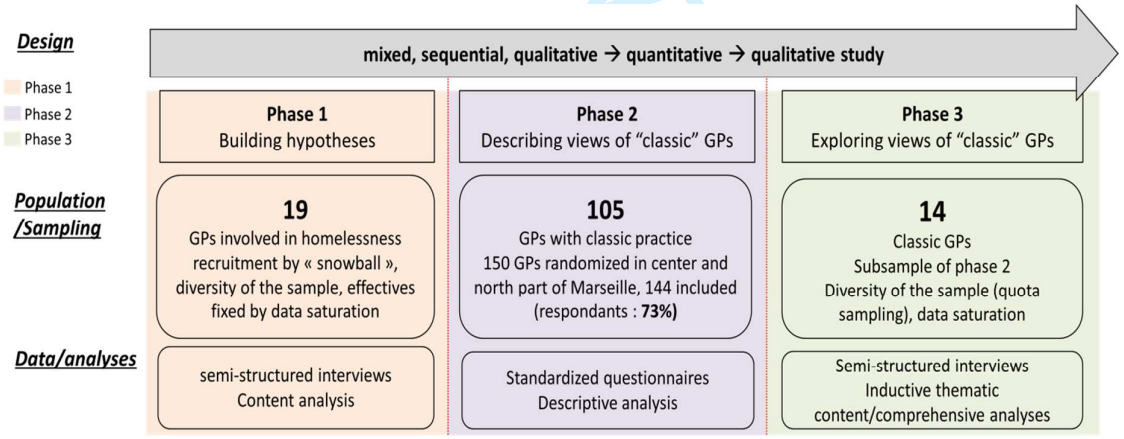
We performed an explanatory sequential study (qualitative, then quantitative, then qualitative phases), in Marseille (France), between November 2013 and March 2015. Research by mixed methods recently developed in the field of health, especially in public health and general practice (34,35). Mixed methods offer:

- The integration of multiple perspectives (36), combining qualitative and quantitative methods at various points,
- The identification of areas of convergence among methods to, in turn, increase the usefulness and validity of the findings (37).

These methods are of particular interest in complex or multidisciplinary areas, like systems organizations or precariousness (38), and are often used for research on homeless people (39,40).

The figure N°1 shows a synthetic description of our protocol, explained below.

Figure N°1 – Synthetic description of the global protocol of the study



1. Phase 1: building hypotheses with GPs involved in care giving for homeless people (qualitative)

Phase 1 was qualitative and aimed to get a better understanding about caring for the homeless by GPs. Furthermore, it was designed to help construct a questionnaire for second phase.

1.1. Population and sampling

This phase targeted GPs considered as "involved" in homelessness: GPs working in specialized centers for homeless people or precarious patients; or ambulatory GPs who considered themselves involved in and/or exposed to homelessness. The first GPs were identified by working in specialized

care centers for precarious or homeless people, 3 of them had already been identified to be particularly involved in homelessness by Dr Balique, who had established contact with them before the construction of this protocol. We then extended the sample by a "snowball" method. This method is justified when we want access to a specific population that is hard to find, and to maximize chance of acceptance (42). We ensured the diversity of our sample by collecting data on age, sex, characteristics of GP's practice and patients. We stopped the inclusion when saturation of data had been reached (42). We didn't performed repeat interviews. GPs were recruited from November 2013 to February 2014.

1.2. Data registration

Semi-structured interviews explored views of "involved" GPs about:

- health, access to health care, and continuity of care of homeless people
- care giving by GPs for homeless people
- recovering medical histories and using shared electronic medical records for homeless people.

The same investigator (principal author of this article, master thesis student and resident in general practice at this time, and who was presented as such) contacted the GPs firstly by phone, agreed to an appointment with them, then conducted the interviews in places chosen by each GP. The interviews were led after 2 pilot tests. They were passed in face to face, recorded (only audio), and then fully transcribed. Field notes were made during and after the interviews, about attitudes of GPs, not recorded information, and the scene of the interviews. We anonymized all the interviews as soon as they were concluded. An information letter was given to each GP, and we obtained written consent to publish their results.

1.3. Analyses

We performed a content analysis on the transcriptions, using N-Vivo 10. This software is useful for qualitative analyses, enabling enhanced validity and rigor in the qualitative analysis process (43). Due to time and financial reasons, only one data coder performed the analyses (JEGO Maeva), but all the step of the coding was followed and approved by Dr Balique. We didn't return the transcripts to the interviewed GPs, but organized a meeting on the first step of the analyses.

2. Phase 2: describing views of a representative sample of "classic" GPs (quantitative)

Phase 2 aimed to quantify exposure, knowledge, difficulties and involvement of "classic GPs" in the care of the homeless.

2.1. Population and sampling

Phase 2 targeted GPs having a classic practice of family medicine in France. They could be exposed to or not, involved in or not, the homeless population. We named these GPs: "classic GPs". We included GPs working in the center or north part of Marseille (which are areas the most affected by homelessness), in private offices or health centers, working alone or in groups. Two public databases of GPs allowed us to identify all GPs who could meet the inclusion criteria. GPs with divergent information in these databases were contacted before randomization to confirm their eligibility. Then we randomized 150 GPs. GPs were recruited from June 2014 to July 2014.

2.2. Data registration

The questionnaire explored GPs' general characteristics, exposure, knowledge, levels of difficulties in care giving and views about how much they can contribute to the primary care of homeless people. In order to increase the response rate, we proposed four modes of answer: phone, post mail, internet (with a secured link on surveymonkey), or face to face. An information letter was given to each GP.

2.3. Analyses

We performed descriptive analyses with SPSS V20, on a descriptive approach, with means and confident intervals. Views of GPs were explored using likert scales. The main variable was the opinion of GPs about how much they could contribute to the care of homeless people.

3. Phase 3: Exploring views of "classic" GPs and understanding which conditions could influence their views (qualitative)

Phase 3 aimed to characterize the views of GPs about their role in care giving to the homeless, and to explore which factors could influence these views.

3.1. Population and sampling

Phase 3 targeted "classic" GPs as defined before. We included a diversified subsample of GPs, by quota sampling within the list of GPs who responded to the questionnaire. GPs were recruited from December 2014 to March 2015; they were diversified in age, sex, type of exercise (liberal/salaried/mixed), having a secretariat or not, working alone or with other GPs at office, and exposure to homeless people in their practice. We stopped the inclusion when saturation of data had been reached (42). We didn't perfomed repeat interviews.

3.2. Data registration

We performed semi-structured interviews, exploring the views of GPs about care giving of the homeless, barriers, difficulties, and conditions for GPs to effectively contribute to the care of the homeless. The same investigator (principal author of this article, doctoral student and resident in general practice at this time, and who was presented as such) contacted the GPs firstly by phone, agreed to an appointment with them, then conducted the interviews in places chosen by each GP. The interviews were led after 2 pilot tests. They were passed in face to face, recorded (only audio), and then fully transcribed. Field notes were made during and after the interviews, about attitudes of GPs, not recorded information, and the scene of the interviews. We anonymized all the interviews as soon as they were passed. An information letter was given to each GP, and we obtained written consent.

3.3. Analyses

We performed an inductive thematic content analysis, using N-Vivo V10. Due to time and financial reasons, only one data coder performed the analyses (JEGO Maeva), but all the step of the coding was followed and approved by Dr Balique. We didn't' return the transcripts to the interviewed GPs (due to a confidential policy), but we returned the results when they were written, before publication.

4. Ethics

All the parts of this study were registered on CNIL (French National Commission for Data Protection and Liberties). The Ethics committee of the Faculty of Medicine of Aix-Marseille approved this study.

III. Results

1. Phase 1: results from interviews on "involved GPs"

1.1. Characteristics of the sample and interview (Table 1)

We interviewed 19 "involved" GPs, mostly at their office (for the others, 1 was led at the home of the GP, 1 on a public area, and 2 on the public health department). We obtained data saturation on the eighteenth interview, confirmed by the nineteenth. The average duration of the records was 1 hour. 5 GPs refused to participate (not concerned by homelessness for 2, lack of time for interview for 3 of them). For 5 other GPs, We never obtained a first contact. The sample was diversified on age, genre, type of exercise and structure for the exercise. Most of them (13) had a salaried or mixed exercise. None of them declared receiving any patient with a high or very high social level.

Table N°1 – Characteristics of "involved GPs" (phase 1, n=19 GPs)

"Involved" GPs' characteristics		Effectives
Age (years)		
	< 40	6
	40 to 50	2
	50 to 60	4
	> 60	7
Sex category		
	Men	11
	Women	8
Current type of exercise		
	Private	6
	Salaried	10
	Mixed	3
Experienced structure for work* (Multiple Choice)		
	Private medical office	11
	Private medical office insuring a medical permanence	3
	Health center	3
	Specific centers for precarious or homeless people	10
	Other	9
Social level of patients seen by GPs (Multiple Choice)		
	Very low	13
	Low	13
	Medium	8
	High	0
	Very High	0

**Structure for work: where GPs were working or have already worked*

1.2. Coding tree

We developed three main categories on this phase:

- Access and continuity of health care for homeless people
- Sharing of medical information when caring for homeless people
- Care for homeless people by general practitioners

This article exposes the main themes on this last category. The themes were derived from the data.

1.3. Three categories of difficulties identified in the care of the homeless (Table 2)

We identified three categories of difficulties for GPs in providing care to the homeless:

1- Personal difficulties, which included practical questions (Money / Time / Reception / management of consulting) and emotional or psychological consequences for the doctors when caring for homeless people;
2- Difficulties with care management: the care management was perceived as complex and heavy. GPs explained these difficulties mostly by: multiples issues for patients, difficulties in knowing medical data, and over investment of doctors;
3- Difficulties in interacting with the homeless patients (physical appearance of homeless people, communication and relation with the patient, comprehension of the patient).

Personnal difficulties and difficulties in care management were identified by more GPs (respectively 18 and 16 GPs) than difficulties in interacting with the homeless patients (14 GPs). When personal difficulties were identified, they took an important part in the discourse of GPs (108 verbatims), showing that it had important consequences on their view about how they treated homeless people. Difficulties about social questions weren't isolated as a perceived difficulty in this phase, but as a barrier for appropriate medical care.

Table N°2 – Difficulties intented by « involved » GPs about taking care of a homeless in general practice

Categories of difficulties	Associated themes [arguments]	Exemple of verbatim transcript
Personal for GPs (16 GPs / *108 Verbatim*)	**Emotional/psychological** (13 GPs, 43 verbatims) [Uselessness / frustration / discouragement / Stress / weakening doctor status / discomfort / wearing out]	*« Being in a repeated failure without capacities to analyze this… Is hopeless. If we can make sense of it, working on it with partners, psychologist and social workers, it is a little bit different. »* *« They deprive doctors from their power »* *« Working with homeless is a school of frustration »*
	Practical (14 GPs, 65 verbatims) [Money / Time / Reception / management of consulting]	*« For a liberal doctor… it's complicated to manage. A doctor has the duty to ensure a secure place to receive other patients »* *« I cannot do that in private. I cannot… in fifteen minutes »*
Care management (18GPs / *60 verbatim*)	**Complexity** (11 GPs, 30 verbatims) [multiple issues / context of homelessness / Means required]	*« It's hard to put back these patients on common primary care. Even if you open social rights for them, they require more time, in terms of understanding, or because of multiple pathologies. That's why doctors have difficulties to care for them. »*
	Importance of care management required (5 GPs, 10 verbatims) [Over investment for doctors / lack of autonomy for patient]	*« But I cannot take this patient and go with her in hospital, right ? »* [About a pregnant patient who need to have a follow in hospital because of risk pregnancy]
	Recovering medical informations (16 GPs, 20 verbatims)	*« So here, this is very important, we often do not know, we know nothing »*
Interaction with homeless patients (14 GPs / *34 verbatim*)	**Physical appearance** (10 GPs, 15 verbatims)	*« When they can't physically be like a person who has a home, already they are seen differently »*
	Communication / Relation (8 GPs, 11 verbatims)	*« When I treat a homeless person, sometimes I see from him a reaction to which I didn't expect »* *« We have difficulties to communicate with these persons, because of language barrier, but also because they are big outsiders »*
	Comprehension of patient (5 GPs, 8 verbatims) [observance, different views]	*« They don't do what we want them to do… There are resistances from them, associated with social problems or… [other problems].Doctors can misinterpret that. »*

1.4. A necessary adaptation for GPs to take care of homeless people

All the « involved » GPs (19 GPs) explained in many field how they must adapt their practice, behavior, or care organization if they wanted to be efficient in receiving and treating homeless people. We identified 4 categories of adaptation. Three of them reflected the difficulties identified by GPs:

1- Practical organization (19 GPs, 29 verbatim): by proposing an immediate response with no appointment for consultations, using a secretary at office, or practicing the "third-party payment" (which means that GPs are directly paid by insurance so that patients need not pay for the consultation);
2- Interaction with homeless patients (19 GPs, 175 verbatim) : by adapting GP's behavior when treating homeless people (showing respect and empathy, building a trusting relationship…), understanding differences in behavior of homeless patients, or taming the patient;
3- Management of care (19 GPs, 175 verbatim): by adapting the objectives of care, or adapting the practice to homeless patient life, with an active outreach strategy ("going to" the patient).

The fourth category concerned learning about specificities of precariousness or homelessness (6 GPs, 12 verbatim).

1.5. Importance of a global, medico-psycho-social, management

When the social management become caring for the homeless

In the discourse of 15 GPs, social issues were more important than medical questions when they treated homeless patients. Furthermore, 14 GPs explained how the social workers played an important role, to ensure access to health care, but also to treat other social problems of the homeless (food, housing).

Importance of a multidisciplinary care management

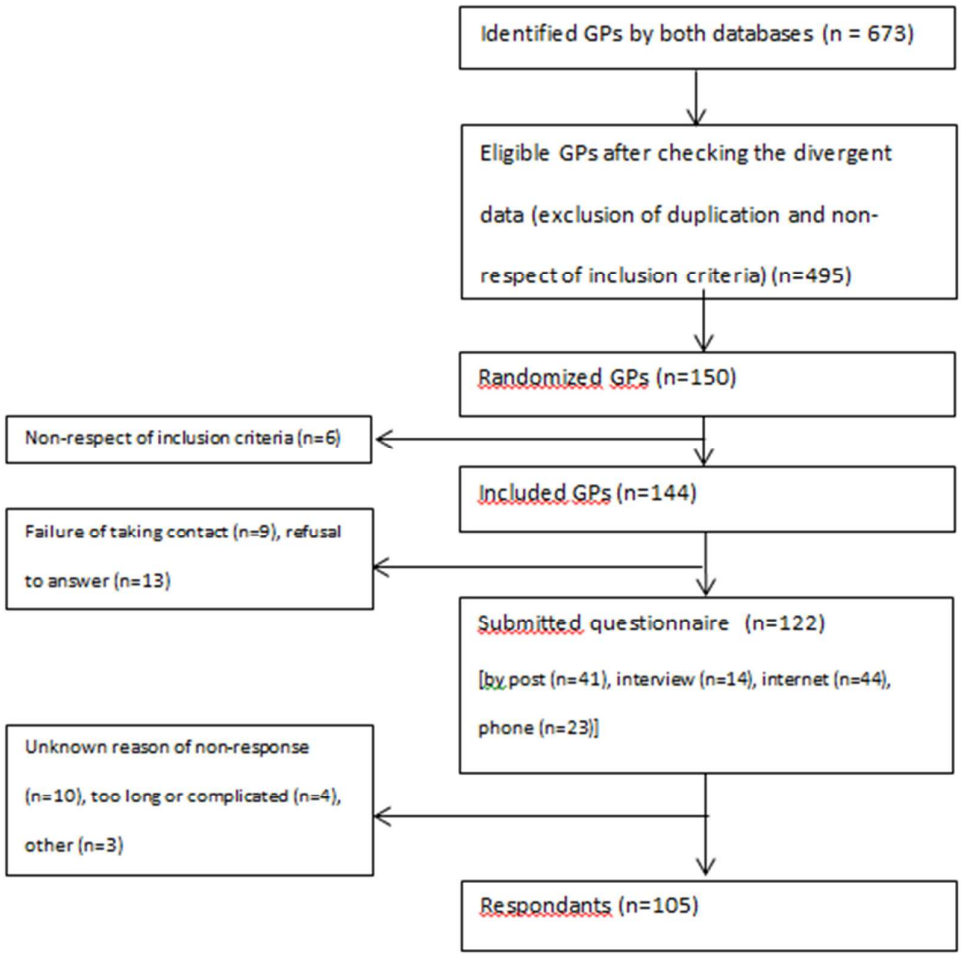
This condition was expressed by 13 GPs. They explained here interest of working with a team of different professionals, including street team, social workers, and psychologists. 8 GPs expressed the need to build a network through the city to connect professionals who practice with homeless.

2. Phase 2: results from "classic" GPs who worked in area concerned by homelessness

2.1. Characteristics of the sample

Among the 150 doctors randomized, 6 were excluded because they did not meet the inclusion criteria and 38 did not respond to the questionnaire. 105 questionnaires were usable, so then the response rate was 73%.

Figure N°2 – Flow chart



Most of the included GPs were greater than 50 years (72%), and were male (74%). Only 9% of them had a salaried or mixed practice. Our sample was a similar age and structure of practice profile to the 2014 average mix of GPs working in medical private office or health centers in France (44) . However, there were fewer females (26%) in our sample in comparison to the average (35.4%) (p = 0.04) (Table 3).

Table N°3 - Characteristics of GPs who responded to the questionnaire and comparison with french GPs (phase 2)

GPs' characteristics	French GPs in 2014 (medical private office and health center)*	GPs included (n=105)		
		Effectives	(%)	p
Age (years)				
< 40	9397 (14.0%)	12	(11.4%)	0.73
40 to 50	12418 (18.5%)	17	(16.2%)	
50 to 60	25121 (37.5%)	41	(39.0%)	
> 60	20000 (29.9%)	35	(33.3%)	
Sex category				
Men	43209 (64.5%)	78	(74.3%)	**0.04**
Women	23727 (35.4%)	27	(25.7%)	
Type of exercise				
Liberal	-	96	(91.4%)	
Salaried/mixed		9	(8.6%)	
Structure for the exercise				
Medical private office	64302 (96.1%)	103	(98.1%)	0.28
Health center	2634 (3.9%)	2	(1.9%)	
Number of years passed in the structure				
< 5		10	(9.5%)	
5 to 10	-	14	(13.3%)	
> 10		81	(77.1%)	
Number of GPs in the structure				
Individual exercise	30869 (46.1%)	45	(42.9%)	0.56
Grouped exercise	36067 (53.9%)	60	(57.1%)	
Secretariat				
No	-	61	(58.1%)	
Yes		44	(41.9%)	
Number of patient seen by day				
< 20	-	30	(28.6%)	
20 to 30		43	(40.9%)	
> 30		32	(30.5%)	
Medium social level of patients currently seen				
1 (very low)	-	7	(6.7%)	
2 (low)		26	(25.0%)	
3 (middle)		65	(62.5%)	
4 (high)		6	(5.8%)	
5 (very high)		0	(0.0%)	

**Data concerning exercise of french GPs on January, 1St, 2014 (DREES)* (44)

2.2. Exposure and knowledges of "classic" GP about precarious patients (Table 4)

A large majority of the GPs (79%) declared having already received a homeless at office. These GPs received very few homeless people (almost never or few often for 79.2% of them). If they were mostly exposed to moderate homelessness (insecure or inadequate housing for 62.8% of the GPs), a significant proportion of them (37.1%) were more likely to also receive roofless or houseless patients.

Few GPs (6.1%) underwent a specific training about precariousness. Most of the "classic" GPs had a low level of knowledge about homelessness and precariousness: only 1,2% of the sampled GPs knew the EPICES score, which is a standard score in France for screening precariousness in general practice (45,46), 28% of GPs knew the PASS system, which is the institutional system to ensure medical care and social help for people with no access to care in France; and 43% of GPs knew the telephone number for emergency housing service (SIAO) (Table 4).

Table N°4 - Exposition and knowledges of classics GPs about homelessness

All GPs (n = 105)	Effectives (%)
Have you already received a homeless at office?	
Yes	83 (79.0%)
No	19 (18.1%)
Don't know	3 (2.9%)
GPs who have already received a homeless and responded part 2 of the questionnaire (n=82)	Effectives (%)
How often do you receive homeless people?	
1 (almost never)	37 (45.1%)
2	28 (34.1%)
3	11 (13.4%)
4	3 (3.7%)
5 (daily)	3 (3.7%)
Which categories of homeless patient do you receive more often?	
Roofless	4 (5.7%)
Houseless	22 (31.4%)
Insecure	33 (47.1%)
Inadequate	11 (15.7%)
Have you already attended a formation about precariousness?	
Yes	5 (6.1%)
Non	77 (93.9%)
Do you know the EPICES* score?	
Yes	1 (1.2%)
No	81 (98.8%)
Do you know one ore most housing services on Marseille?	
Yes	56 (68.3%)
No	26 (31.7%)
Do you know what is a PASS?**	
Yes	23 (72.0%)
No	59 (28.0%)
What is the telephone number of SIAO*?**	
Correct answer	35 (43.2%)
Wrong or unknown answer	46 (56.8%)

**EPICES score is a valid screening tool for precariousness, which explore various dimension of precariousness by 11 questions and can be used in general practice*(45,46)

*** PASS are social or medico-social centers developed in order to facilitate access to care for socially deprived persons. These centers offer free medical aid for primary care and social support for these people in public hospital.*

**** SIAO are integrated area-based services for the reception and orientation of people facing homelessness. They were created in France in each department with the France's national strategy 2009 – 2012.*

2.3. Difficulties perceived by GPs in caring for homeless people (Table 5)

Social management when caring for homeless people emerged as the greatest difficulty for classic GPs when treating the homeless (mean=3.95/5 ± 0.98, on a Likert scale between 1 [no difficulty] and 5 [very high difficulties]). Other significant difficulties were related to (in decreasing order): recovering medical information (mean=3.78/5 ± 1.05), management of patient's compliance (mean=3.67/5 ± 0.99), loneliness in practice (mean=3.45/5 ± 1.22), and excessive time necessary for consultation (mean= 3.25/5 ± 1.12) (Table 5).

Table N°5 – quantification of the levels of difficulties felt on Likert scale by "classic GPs" who have already received homeless patients, when they take care of these patients (n=82 GPs)

Difficulties	Mean*	SD**	IC95***
Practical			
Time necessary	3.25	1.12	[3.00 – 3.50]
Patient's reception	2.60	1.29	[2.31 – 2.88]
Financial (volunteer work)	2.19	1.25	[1.91 – 2.46]
Care management			
Complexity	3.00	1.17	[2.74 – 3.26]
Recovering medical information	3.78	1.05	[3.55 – 4.01]
Social management	3.95	0.98	[3.74 – 4.17]
Interaction with patients			
Patient's compliance	3.67	0.99	[3.45 – 3.89]
Patient's behavior	2.78	1.21	[2.51 – 3.05]
Patient's physical appearance	2.74	1.28	[2.46 – 3.02]
Emotional			
Frustration of GPs	2.80	1.17	[2.55 – 3.06]
Depreciation of GPs	1.69	1.00	[1.46 – 1.91]
Loneliness in practice	3.45	1.22	[3.18 – 3.72]

**Mean of GPs' answers on Likert scale (between 1=none and 5=very high difficulties)*

***SD: Standard deviation*

****IC95: 95% confidence interval*

2.4. Divergent answers regarding how GPs could contribute to the care of homeless people

Views of GPs about how they could contribute to the homeless people care were divergent, with a mean of 3.05/5 ± 1.04 on Likert scale (between 1 for "not at all" and 5 for "very much"). Some GPs wrote explanations for this question: a significant part of them talked about insufficient means, or necessity to adapt the health system and primary health care organization for permitting such a contribution for ambulatory GPs. Only two of them said that it wasn't a question concerning GPs or that some GPs wouldn't accept to contribute because of their personal position.

3. Phase 3: Explaining "classic" GP's views about their contribution to health care for homeless people (qualitative analysis on a subsample of "classic" GPs)

3.1. Characteristics of the subsample and interview

We included 14 GPs, who were diversified in sex, age, type of practice, number of doctors in the office, secretary, and having or not received a homeless patient in the past. Interviews were mostly passed at their office (except 1 which were passed in a public area). The average duration of the records was 29 minutes. GPs who refused to participate explained their refusal by lack of time for the interview. We obtained data saturation on the thirteenth interview, confirmed by the fourteenth. 1 GP delayed the interview but wasn't included because data saturation had been reached.

We identified 4 profiles of GPs:

1- **GPs regularly involved in and who had an experience in the care management of homeless** (2 GPs): they self-reported a good knowledge of homelessness, and many relations to coordinate the care of homeless patients. They recruited homeless because of this profile.

2- **GPs who were exposed to homelessness and felt concerned about the problem** (3 GPs): they worked on particular deprived area, or had mixed activities concerning homelessness or precariousness.

3- **GPs who were not exposed to homelessness but felt concerned** (4 GPs): they worked on suburbs area, and were not exposed to the roofless. They reported that they almost never received homeless patient without explaining why.
4- **GPs who were not exposed to homelessness and had negative views** (5 GPs): they worked also in suburban areas. They showed negative attitudes and views which could prevent homeless patients from consulting again these doctors.

3.2. Coding tree

We developed four main categories on this phase:

- Health system organization
- View of general practitioners about homeless people
- Role of general practitioners when caring for homeless people
- Care for homeless people by general practitioners

The themes were derived from the data.

3.3. Conditions for "classic" GPs to be involved in treating the homeless (Figure 3)

The qualitative analysis showed that maintaining a stable follow-up was a major condition for GPs to contribute effectively to the care of homeless people (11 GPs, 26 verbatim):

- For some GPs, the presence of stable follow-up was the reason why they could contribute to the care of homeless people, as shown in this extract: *"Yes [answering the question if GP could contribute, bring something positive to the health of homeless people], because most of the time I see, as I said, finally they come back […] They come back to see me […] they choose me as a family doctor".*
- For other GPs, a stable follow-up was the most cited condition to enable participation in the care of homeless people: *"it would be necessary to develop a kind of coercion which led them to a little loyalty. Here we can build something"*
- The last GPs cited failure of follow-up to argue why they couldn't contribute to the care of homeless people.

As shown on figure 3, we identified three main factors that influenced the possibility of maintaining a stable follow-up: attributes of patients, care management conducted by GPs, and health system organization.

The factors that we identified in the discourse of GPs were more linked to GPs' care management and to health care organization, than to homeless patients themselves.

- Concerning health organization: social management, pluridisciplinary practice on a team, backing, and active outreach were mentioned as conditions to enhance the follow-up of homeless patients; social issues posed the greatest barrier for these GPs (access to social rights, and housing).
- Concerning GPs : geographic proximity, attitude, trust in the relationship, education on health, and adaptation in the care giving by GP were mentioned as conditions that could enhance the follow-up of homeless patients; negative attitudes and lack of active outreach for the homeless patients were the most barriers to the success of follow-up identified.

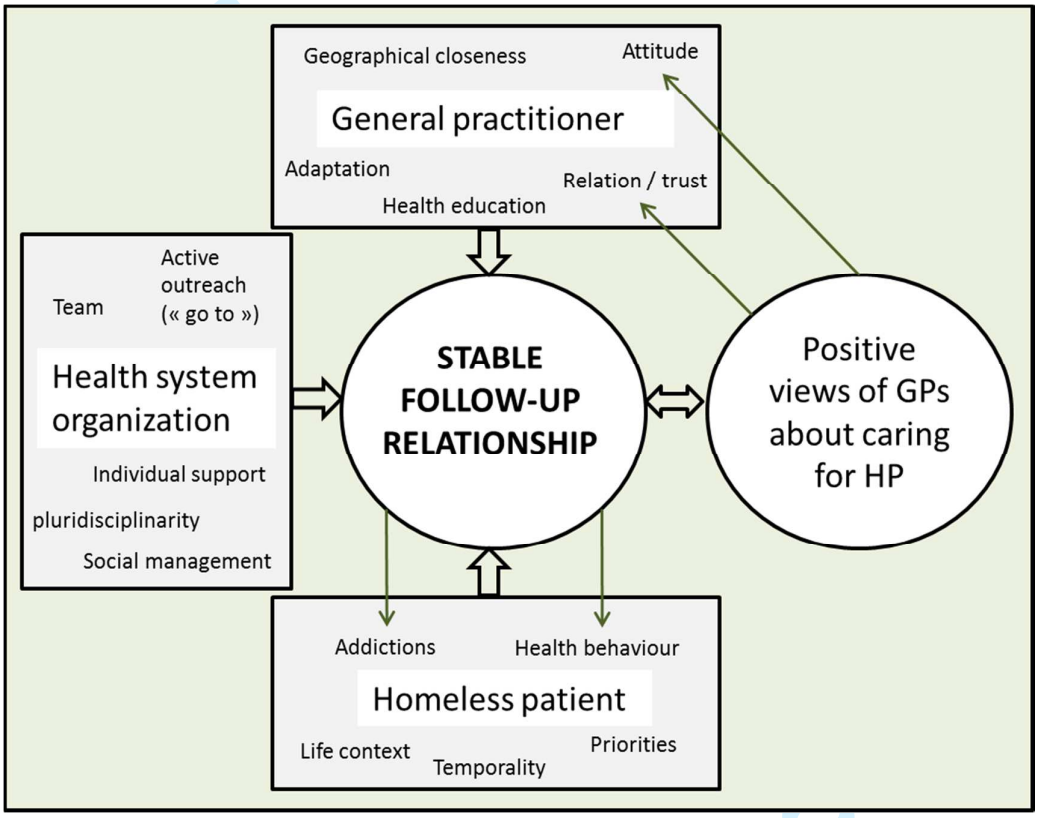
Having a stable follow-up relationship seemed to enhance views and attitudes of GPs. Success of a trust-based relationship, and recovering social rights, were all noted as the elements of a virtuous circle created by the follow-up.

Two others conditions were identified for GPs to effectively contribute to the care of homeless people:

- Working in closely relation with social workers (9 GPs, 12 verbatim);
- Adaptation of GPs with better knowledge about homelessness (3 GPs, 4 verbatim).

These conditions seemed also linked to the success or failure of a stable follow-up as shown on figure 3.

Figure N°3 – Identified factors to influence the odds of building a stable follow-up of homeless patients (interview with "classic GPs", phase 3)



IV. Discussion

1. Main result: GPs could effectively contribute to the care for homeless people if we adapted the conditions of their practice

In this study, almost 80% of general practitioners (consistent use of GP) who worked in the center or north part of Marseille had already been exposed to homeless patients. Analyzing the three parts of this study, we showed that conditions of a GP's practice were a major factor which influenced the views of GPs about how they could contribute to care giving for homeless people. Indeed, in the quantitative part, "Classic" GPs felt the most difficulties in the care giving for the homeless due to: social management, recovering medical information, management of observance of homeless patient, loneliness in practice, time necessary for consultation and complexity of care management. All these items could be improved by a better organization of primary care, coordination and

organization of general practice. A study led in the UK in 1996 has showed similar results, with social problems as the first ones perceived by GPs when they cared for homeless people (90% of GPs agreed), followed by lack of medical records, complex health problems, and alcohol or substance misuse (30). We didn't directly ask the "classic" GPs about substance misuse during the questionnaire, but behavior of homeless patients wasn't perceived as an important difficulty. However, during the phase 3 (qualitative), when 'classic' GPs perceived difficulties concerning patients with problems of substance misuse, it was a strong barrier for them to accept these patients. We attempted to identify which factors influenced the view of GPs about how much they felt they could contribute to care giving for homeless : in univariate analysis, the answers to this question were more positive for GPs who were male (with respective means of 3.16/5 for men and 2.53/5 for women, p=0.024) , young (with respective means of 3.42/5 for GPs aged less than 50 years, and 2.86/5 for GPs aged more than 50 years, p=0.022), and who had a salaried or mixed-salaried and liberal- practice (with respective means of 3.8/5 for salaried or mixed GPs, and 2.97/5 for liberal GPs, p = 0.042). In multivariate analysis, the relation was significant only relative to sex. However, according to the representative repartition of kind of exercises for ambulatory GPs in France, we had only 5 GPs on the 82 receiving homeless patients who had a salaried or mixed exercise; this can explain why, despite an important difference between salaried/mixed and liberal GPs, it wasn't statistically significant. In the qualitative analysis led on "classic" GPs, we identified that a stable follow-up relationship between homeless patients and GPs was a central condition for GPs to be pertinent and effective in the care management of the homeless. This condition seemed to be closer linked to characteristics of the health system organization or characteristics of GPs' activity and behavior than the patients themselves. After analyzing back the discourse of "involved" GPs, we found that "involved" GPs viewed the follow-up as something difficult to obtain, but a responsibility and challenge for them in the care giving for the homeless. So we can expect to improve this follow-up by adapting the conditions of practice for GPs. We need more data to explore if the conditions of practice influenced GPs or if view and positions of GPs led them to choose this specific kind of practice. It would be interesting to complete these results by a study comparing a group of salaried or mixed GPs and a group of liberal GPs.

2. Strengths and weaknesses of this study:

Qualitative methods involve some subjectivity of the investigator during the analysis data process. Due to financial and time reasons, we were unable to triangulate the analyses with another investigator. However, we improved the validity of our data by using four different methods : the use of a software (N-vivo) to enhance the rigor of the analyses (119,120); the validation by a focus group including interviewed GPs after the first construction of the evaluation grid for qualitative analysis on "involved" GPs, the validation by the director of this research on each step of the construction of the evaluation grid for both qualitative phases, and the validation of both results by our methodological triangulation using a mixed sequential qualitative-quantitative-qualitative method.

For quantitative part, we chose to include GPs who worked in the suburbs which were more affected by precariousness, in order to address the problem on a concerned population, and to follow a local interventional program for homeless in Marseille (47). The sampling process was rigorous so we can consider our sample to be representative of GPs working in the suburbs affected by precariousness. That can explain why our sample wasn't completely representative of French GPs: we don't want to extend these data to all GPs, but only to GPs who work in urban area and in low-income suburbs. We obtained a good level of response (74%) if we compare to similar design led on close themes (29,30).

There was no difference between respondents and non-respondents concerning work area and genre (the only data we had for non-respondents). However, we can suspect that GPs who didn't answer the questionnaire had more negative views about homeless people and GP's role in their care. If the data collection has been diversified to improve the proportion of respondents, it could influence the response of GPs, in particular when it was conducted "face to face". Using a standardized questionnaire and the same investigator should have reduced this limit.

3. Operational propositions for an efficient medical care in primary care for homeless people: how we can adapt the ambulatory condition of GPs' exercise

Regarding to our results and data from other studies, we propose some specific solutions for GPs to improve access and continuity of care for homeless people.

3.1. A grouped and multidisciplinary practice

The importance of a multidisciplinary and integrated approach (proposing for example housing on the same time than health care) for homeless people has already been described (26,48). Concerning specifically GPs : GPs' attitudes toward homeless people has been identified on a qualitative study as the major barrier to access to primary care for homeless people (49). As it has been described that the behavior of health workers with the homeless was modified when they worked in a multidisciplinary structure (50), we can expect that this kind of adaptation could be beneficial to personal experiencing of care management for GPs (51), and enhance positive attitudes which can lead to more convenient access to care for the homeless.

3.2. Associate medical, social and psychological care, with developing closer relations between GPs and social workers

Our study showed how social issues become a part of care when GPs has to care for homeless people. Other studies led on precarious patients revealed the necessity to develop closer relationships between health workers and social workers (32), so we can expect that it's the same needs when caring for homeless patients. In France, « microstructures » have developed this multidisciplinary scheme in general practice offices, integrating a presence of psychologist and social workers in a private medical office for 2 hours per week. These programs concerned drug-addicted patients who lived in highly precarious conditions. This scheme enhanced access and continuity of care concerning prevention and chronic diseases for the patients who were included (52,53).

3.3. Improving knowledge of GPs about precariousness and homelessness

In qualitative analyses, the lack of knowledge of GPs about social questions and the lack of experience of GPs in homelessness seemed to influence their behavior and capacity to adapt their management for homeless people. A lack of knowledge about precariousness as already been highlighted in other French studies, where GPs identified training needs for multidisciplinary approach and social questions (29,54,55). The necessity to improve knowledge and develop training of GPs about homelessness as also been discussed by Riley and Al.: for them, it's one of the major solution (with support of primary care trusts) to make the "full integration of homeless people into mainstream primary care services" occur (25). Both classic and specialized GPs experienced difficulties when caring for the homeless, with difficulties to maintain a stable follow-up relationship. But the "involved" GPs tended to have more positive views about homeless patients, showed a better control of the complex situations of these patients, and viewed a successful follow-up

relationship more as the responsibility of GPs to make it possible than as a condition for GPs to take care for homeless people.

3.4. Considerate non-medical time in remuneration of GPs

It's necessary to adapt the remuneration mode for liberal GPs, so that they consider the complexity of the care giving for homeless, and to give more time for active outreach, patient support, developing a care relation, and coordination of care. These adaptations are described as solutions to improve the use of health system by the homeless, by enhancing care requests, providing them greater self-confidence and enhancing the trust of the homeless patients in the health care system (56).

3.5. Develop a partnership between tailored and non-tailored systems

Lack of knowledge and difficulties for GPs to communicate with social or other specialized centers as been described in a French mixed study led on GPs about precarious patients (29). Lester and Al., analyzing the limits of tailored centers for the homeless, described a similar model, which can "create a bridge between separation and integration, opening up access to mainstream care for the majority of homeless people and also providing immediate transitional primary health care and social care services through interested GPs" (30). As some GPs explained it in our interviews, dedicated structures, which answer to social needs for homeless people, could be the first contact in care for homeless. The homeless could secondarily be sent to "classic" GPs when they had recovered sufficient social rights and personal capacity to follow an adequate itinerary of care. Wright and Al. recall that a specialized general practice for homeless people is ideal to engage them in care, and guide them in "appropriate use of primary care"; after this, the patient can be "encouraged to register with a mainstream practice". But Wright and Al. remember that "this switch can be difficult not only for patients but also for doctors when there is a strong personal commitment" (57). It's necessary to identify GPs who could engage in the care of homeless people, offer them training about precariousness, and foster closer collaboration their practices and those of the dedicated system. These tailored structures could also become a relay for crisis management or a support for GPs who need assistance in the care managing of homeless people.

V. Conclusion

General practitioners could effectively contribute to improving the health of homeless people, if organizational and material conditions of their practices were adapted properly. It's necessary to develop a grouped and multidisciplinary offering, permitting an integrated medico-psycho-social approach. Developing a bridge between dedicated and not-dedicated centers could improve the access, quality and coordination of care for homeless people. This medico-psycho-social approach should serve the entire population, especially patients whose pathologies or circumstances are considered as "complex". These results will enable construction of a new model of primary care organization to improve access to care and health for homeless people.

Contributorship statement

JEGO-SABLIER Maeva: designed the study, performed data collection on the 3 phases (all interviews, and questionnaires), performed the analyses, drafted the article, and approved the final version;
GRASSINEAU Dominique: co-directed the third part of this study, contributed to the conception of the work and interpretation of data, revised the article, and approved the final version;
BALIQUE Hubert: directed this whole work, gave advices for designing the study and analyses, revised the article, and approved the final version;
SAMBUC Roland: gave advices for designing the study, revised the article, and approved the final version;
LOUNDOU Anderson: gave advices for designing the study, supported the data analyses, revised the article, and approved the final version;
GENTILE Gaetan: contributed to the conception of the work and interpretation of data, revised the article, and approved the final version;
GENTILE Stéphanie: tutor of this whole work, gave advices to get research scholarship, gave advices for designing the study and analyses, revised the article, and approved the final version.

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Pr. GIUSIANO Bernard: helped to elaborate the research question, and to design the study
Pr. TANTI-HARDOUIN Nicolas: gave usefull advices to enhance our reflection concerning homelessness
DAGUZAN Alexandre: was a support to enhance the methodology of this study
PETIT Juny: writing assistance (language editing)
WELCH Adam: writing assistance (language editing)

Competing interests

The authors declare having no competing interest

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Data sharing statement

- A doctoral thesis (medicine) was passed by JEGO Maeva on November, 23th, 2015, which treated about these data and other : "Place du médecin généraliste dans la prise en charge des personnes sans chez-soi".

- An Oral communication was made about data from the same study, in the CMGF ("Congrès de la Médecine Générale de France") on March 2016, in Paris.

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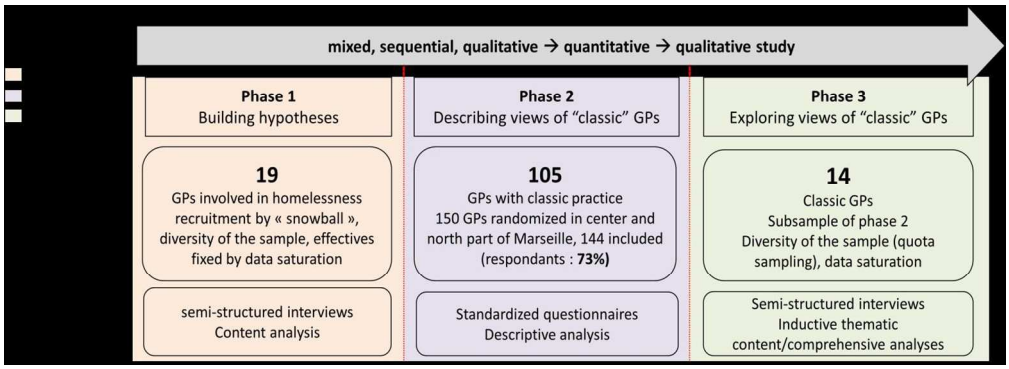

Figure N°1 – Synthetic description of the global protocol of the study
Orange - phase 1
Violet - phase 2
Green - phase 3

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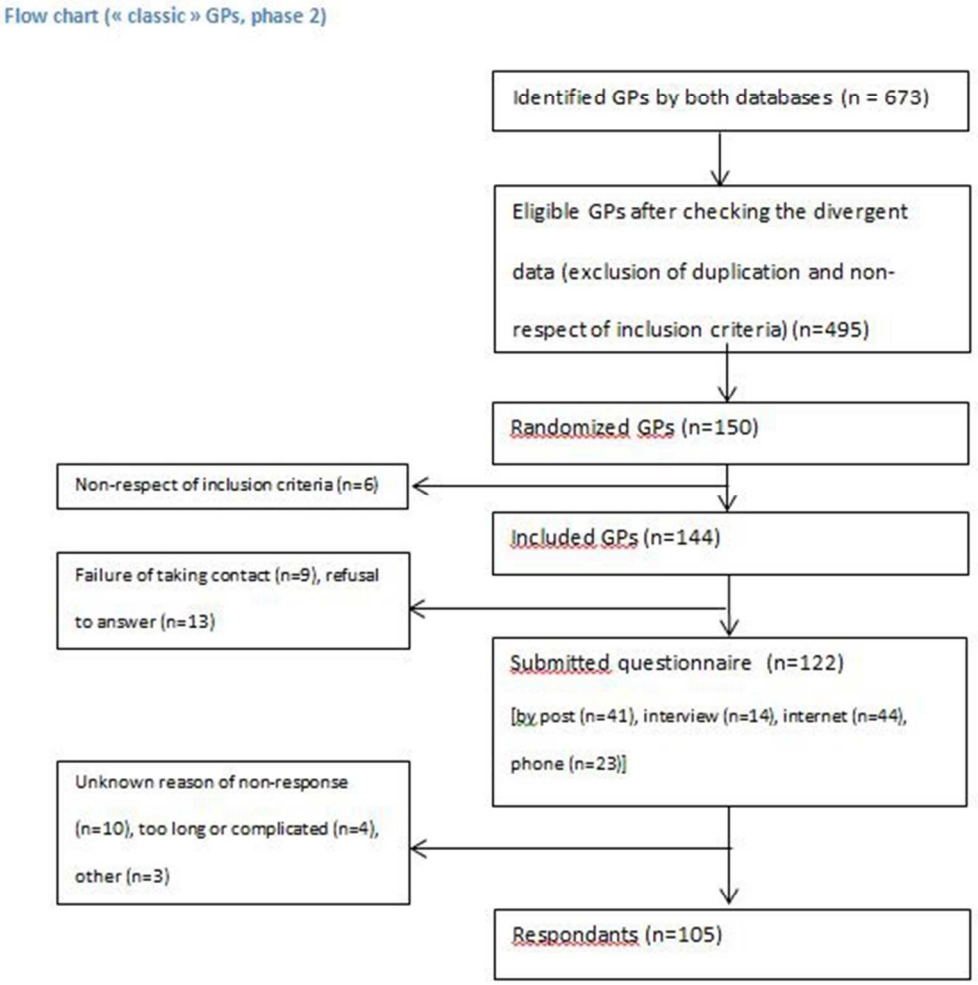

Flow chart

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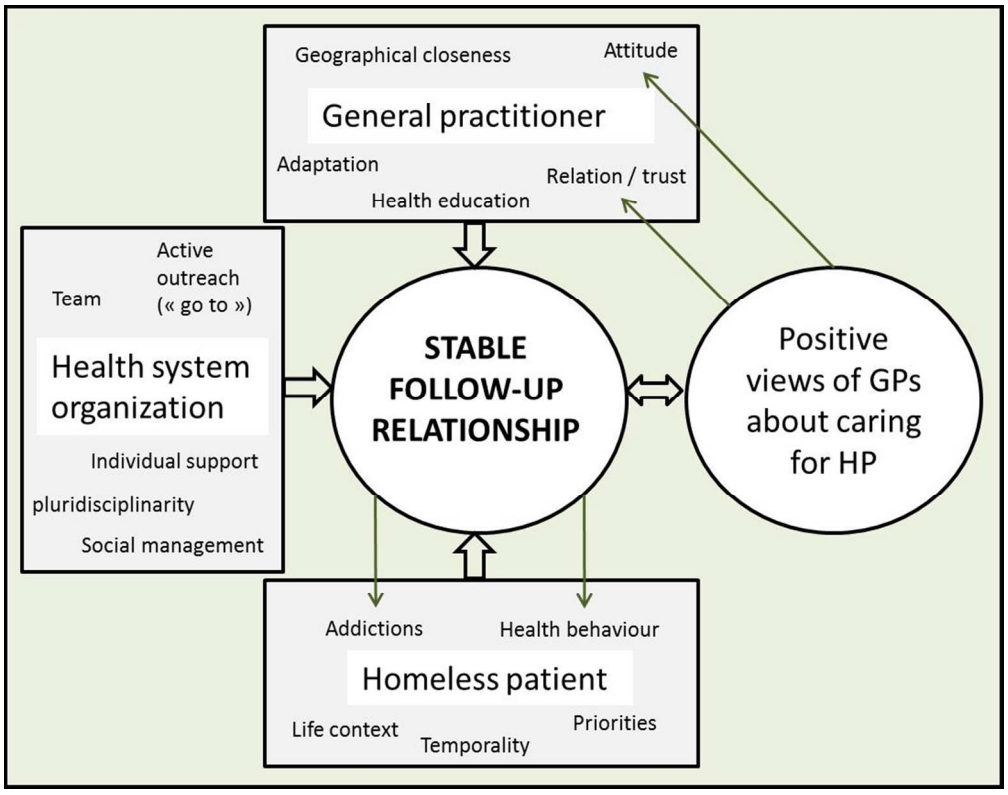

Figure N°3 – Identified factors to influence the odds of building a stable follow-up of homeless patients (interview with "classic GPs", phase 3)

184x144mm (150 x 150 DPI)

COREQ

Domain 1 : research team and reflexivity		
1- Interviewer/facilitator	Which author conducted the interview or focus group ?	JEGO Maeva : p6 (phase 1), p7 (phase 3)
2- Credentials	What were the researcher's credentials ?	JEGO Maeva was master thesis student, and resident in general practice for phase 1 (p6) / Doctoral student and resident in general practice for phase 3 (p7)
3- Occupation	What was their occupation at the time of the study ?	JEGO Maeva : In a research year to perform a master thesis for phase 1 (p6 and 20), resident in general practice and doctoral student for phase 3 (p7)
4- Gender	Was the researcher male or female ?	Female (p1)
5- Experience and training relationship with participants	What experience or training did the researcher have ?	Student in master thesis for phase 1 (p6), doctoral student for phase 3 (p7) Further information (not in the article) : JEGO Maeva received training about qualitative methods with FAYR GP (French Association of Young Researchers on General Practice) on September 2012, before the construction of the protocol of this study. She also had theorical training during the master thesis. It was her first practical experience in qualitative design. Dr Balique, Dr GRassineau and Pr Gentile Stéphanie already directed qualitative project, and had experience about qualitative methods.
6- Relationship established	Was a relationship established prior to study commencement ?	Phase 1 (p5-6) : « The first GPs were identified by working in specialized care centers for precarious or homeless people, 3 of them had already been identified to be particularly involved in homelessness by Dr Balique, who had established contact with them before the

		construction of this protocol." Phase 3 : GPs recruited from GPs who already responded the questionnaire. (p7)
7- Participant knowledge of the interviewer	What did the participants know about the researcher ?	The participants knew that JEGO Maeva for each phases about the activities of Dr JEGO. (p6 for phase 1, p7 for phase 3)
8- Interviewer characteristics	What characteristics were reported about the interviewer	Cursus / Research scolarship (p1, p6/7, p20)
Domain 2 : study design		
9- Methodological orientation and theory	What methodological orientation was stated to underpin the study ?	Content analysis (p2, 6 for phase 1 and 7 for phase 3)
10- Sampling	How were participant selected ?	Snowball for phase 1. (p6) Quota sampling for phase 3. (p7)
11- Method of approach	How were participants approached ?	By telephone to make the contact. Then the interview were conducted in face to face (p6 for phase 1, 7 for phase 3)
12- Sample size	How many participants were in the study ?	19 for phase 1 (page 7)/ 14 for phase 3 (page 14) (defined by data saturation) (p 6-7)
13- Non-participation setting	How many people refused to participate or dropped out ?	Phase 1 (page 7) : 5 GPs refused to participate : - Not concerned by homelessness (2) - Lack of time for interview (3) For 5 other GPs, We never obtained a first contact. Phase 3 (page 14) : GPs explained their refusal by lack of time for the interview. 1 GP delayed the interview but wasn't interviewed because data saturation had been reached
14- Setting of data collection	Where was the data collected ?	Mostly in workplace (office of GPs). Details mentionned for others. (page 7 for phase 1, 14 for phase 3)
15- Presence of non-participants	Was anyone else present besides the participants and researchers ?	No (indirectly mentionned p6-7)
16- Description of sample	What are the important	Phase 1, (page 7): We included

data collection	characteristics of the sample ?	19 “involved” GPs. The sample was diversified on age, genre, type of exercise and structure for the exercise. Most of them (13) had a salaried or mixed exercise. None of them declared receiving any patient with a high or very high social level. More details about the sample of phase 1 are avalable on attached document N°1. Phase 3 (page 14) : We included 14 GPs, who were diversified in sex, age, type of practice, number of doctors in the office, secretary, and having or not received a homeless patient in the past. We obtained data saturation on the thirteenth interview, confirmed by the fourteenth.
17- Interview guide	Were questions, prompts, guides provided by the authors ? Was it pilot tested ?	P6-7 (thematics, pilot test). Further details can be provided if necessary.
18- Repeat interviews	Were repeat interviews carried out ?	No p6-7
19- Audio/visual recording	Did the research use audio or visual recording to collect the data ?	No p6-7
20- Field notes	Were field notes made during and/or after the interview or focus group ?	Yes p6-7
21- Duration	What was the duration of the interviews or focus group ?	Phase 1 : mean of 1 hour p6/7 Phase 3 : mean of 29 minutes p14
22- Data saturation	Was data saturation discussed ?	Yes p5-6 (methods), 8-14 (results)
23- Transcripts returned	Were transcripts returned to participants for comment and/or correction ?	No (due to protocol and confidential policy). But for phase 1, a meeting was organized with participants at the begining of the analyses, to have their feed back. P6-7
Domain 3 : analysis and findings		
24- Number of data coders	How many data coders coded the data ?	1 (JEGO Maeva), supervised by Dr Balique Hubert. P6 – 7
25- Description of coding tree	Did authors provide a	Yes (can be more precise if

	description of the coding tree ?	necessary) P8 - 15
26- Derivation of themes	Were themes identified in advance or derived from the data ?	Derived from the data P8-15
27- Software	What software, if applicable, was used to manage the data ?	N-Vivo version 10 : p 6-7
28- Participant checking reporting	Did participants provide feedback on the findings	Yes, by : - A meeting organized during analyses of phase 1 - Feed back after reading master thesis and doctoral thesis, before the ending of the script. P6-7
29- Quotations presented	Were participants quotations presented to illustrate the themes / findings ? Was each quotation identified ?	Yes. Identification has not been reported in the article, but can be if necessary. P9 and 15
30- Data and findings consistent	Was there consistency between the data presented and the findings ?	(I hope, but it's submitted on your appreciation) P9 ; 15
31- Clarity of major themes	Were major themes clearly presented in the findings ?	(I hope, but it's submitted on your appreciation) P 9-10, 15-16, 16-17
32- Clarity of minor themes	Is there a descrption of diverse cases or discussion of minor themes ?	Yes, but not on all the minor themes (because the article would be too long). P9-10, 15-16

STROBE Statement—checklist of items that should be included in reports of observational studies

	Item No	Recommendation
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract p2
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found p2
Introduction		
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported p4
Objectives	3	State specific objectives, including any prespecified hypotheses p5
Methods		
Study design	4	Present key elements of study design early in the paper p2,5,6/7
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection p6 to 7
Participants	6	*Cross-sectional study*—Give the eligibility criteria, and the sources and methods of selection of participants p6 to 7
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable p6 to 7
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group p6 to 7
Bias	9	Describe any efforts to address potential sources of bias p6 / 16
Study size	10	Explain how the study size was arrived at p6 to 7 / 17
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why p7
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding p7
		(*b*) Describe any methods used to examine subgroups and interactions na
		(*c*) Explain how missing data were addressed p17
		Cross-sectional study—If applicable, describe analytical methods taking

	account of sampling strategy p6
	(*e*) Describe any sensitivity analyses p6-7/17

Continued on next page

Results		
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed p10-11
		(b) Give reasons for non-participation at each stage p11
		(c) Consider use of a flow diagram p11
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders p11-12
		(b) Indicate number of participants with missing data for each variable of interest na
Outcome data	15*	
		Cross-sectional study—Report numbers of outcome events or summary measures na
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included p13-14
		(*b*) Report category boundaries when continuous variables were categorized na
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period non relevant
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses p17
Discussion		
Key results	18	Summarise key results with reference to study objectives p16/17-18
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias p17/18
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence p17/18
Generalisability	21	Discuss the generalisability (external validity) of the study results p17/18
Other information		
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based p20

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

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Improving access and continuity of care for homeless people: how could general practitioners effectively contribute? Results from a mixed study.

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Keywords:	PRIMARY CARE, general practitioners, homeless people, access to health care, mixed methods

Improving access and continuity of care for homeless people: how could general practitioners effectively contribute? Results from a mixed study.

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Abstract

Objectives: To analyze the views of general practitioners (GPs) about how they can provide care to homeless people (HP) and to explore which measures could influence their views.

Design: Mixed-methods design (qualitative –> quantitative (cross-sectional observational) → qualitative). Qualitative data were collected through semi-structured interviews; quantitative data were collected through questionnaires with closed questions. Quantitative data were analyzed with descriptive statistical analyses on SPPS; a content analysis was applied on qualitative data.

Setting: primary care; views of urban GPs working in deprived area in Marseille were explored by questionnaires and/or semi-structured interview.

Participants: 19 GPs involved in HP's healthcare were recruited for phase 1 (qualitative); for phase 2 (quantitative), 150 GPs who provide routine health care ("standard" GPs) were randomized, 144 met the inclusion criteria and 105 responded the questionnaire; for phase 3 (qualitative), data were explored on 14 "standard" GPs.

Results:
In quantitative phase, 79% of the 105 GPs already treated HP. Most of the difficulties they encountered treating HP concerned social matters (mean level of perceived difficulties = 3.95/5, IC95 [3.74-4.17]), lack of medical information (mn=3.78/5, IC95 [3.55-4.01]patient's compliance (mn=3.67/5, IC95 [3.45-3.89]), loneliness in practice (mn=3.45/5, IC95 [3.18-3.72]) and time required for doctor (mn=3.25, IC95 [3-3.5]. From qualitative analysis we understood that maintaining a stable follow-up was a major condition for GPs to contribute effectively to the care of HP. Acting on health system organization, developing a medical and psychosocial approach with closer relation with social workers and enhancing the collaboration between tailored and non-tailored programs were also other key answers.

Conclusion: If we adapt the conditions of GPs practice, they could contribute to the improvement of HP's health. These results will enable the construction of a new model of primary care organization aiming to improve access to health care for HP.

Key words:

General practitioners, Primary care, homelessness, homeless people, access to health care

Strengths and limitations of this study

Strengths and limitations of this study

- Using mixed methods permitted to have a deeper analysis of a complex phenomenon
- We obtained a high quantitative participation rate (73%), compared to other similar studies conducted on GPs.
- Qualitative analyses were performed by only one data coder. However, to enhance the accuracy of our interpretation process, we discussed our analysis process and conclusions with different actors (directors of this study, interviewed GPs, external actors) on critical times of the interpretation of data.
- During the quantitative phase, to satisfy our operational objectives, we selected only GPs working in the poorest areas of Marseille: extrapolation of our results should be limited to GPs working in urban area, in low income suburbs, and in countries with similar social policies as France.

I. Introduction

The number of homeless people increased by 50% between 2001 and 2012 in France (1), with a similar evolution in Europe during the same time frame (2). In 2012 in France, almost 900,000 people lacked personal housing, and almost 3,000,000 lived in poor-quality housing conditions (3). This situation continues to affect a growing number of households and young people (4). FEANTSA (European Federation of organizations working with the people who are homeless) has recently developed an European Typology of Homelessness and housing exclusion (ETHOS), to improve understanding and measurement of homelessness in Europe, and provide a common language for transnational exchanges on homelessness (5). This typology considers 4 operational categories of homelessness:

- Roofless: people living rough, or in emergency accommodations
- Houseless: people in homeless shelters or receiving longer-term support (due to homeless)
- Insecure: people living in insecure accommodations or under threat of eviction
- Inadequate: people living in temporary / non-conventional structures, in unfit housing, or under conditions of extreme overcrowding (6).

Given the increase of homelessness in the past years, improving the health and social conditions of the homeless has become a priority for European social politics (2,7); it is more important than ever to explore the effectiveness and feasibility of a scheme in which ambulatory GPs (family doctors) play a central role in primary care for the homeless. Indeed, homeless people have complex health care needs, accompanied by somatic, psychiatric and social troubles (8,9). These people suffer from higher morbidity (9–11) and earlier mortality compared to people with stable housing. The average age of death is between 40 and 50 years (12,13) and the standardized mortality ratios in high-income countries is typically reported from 2 to 5 times the age-standardized general population (9).

They face difficulties in accessing primary care (14–16) and go through inadequate therapeutic itineraries, with multiple visits to emergency services (17,18). We know that GPs see a significant proportion of the homeless population : 84% of homeless people declared that had been consulted by a GP within a year of a study led in France in 2001 (19); a Canadian study, shows that 43% of homeless people had a designated family doctor (20). Family doctors are generally viewed positively by precarious patients, which includes homeless people : they build a confident relationship and are seen as a support for these patients (21). However, GPs aren't identified by homeless people as the first person to turn to for medical assistance whenever they feel ill (22,23).

The debate between developing specialized structures for homeless people or adapting "non-specialized" general practice for homeless people has not yet been resolved (24). According to a recent literature review, primary health-care programs specifically tailored to homeless individuals might be more effective than standard primary health care (25). Such programs could also yield more appropriate care and give the homeless patient a better experience in their care (26). But tailored programs have many limits : these programs (particularly associative or humanitarian programs) have often insufficient resources to meet such high-level care needs (27); furthermore, such programs could reinforce the feeling of exclusion of the homeless, and enhance ghettoization of care for them (28).

It has been described that GPs felt multiple difficulties in caring for and ensuring continuity of care for precarious or homeless patients. Most of the studies exploring views of GPs in France targeted precarious patients or migrants; they used mostly a descriptive approach or targeted "specialized" or "involved" GPs (29–33).

We made the hypotheses that, involving "non specialized" general practitioners could improve the health of the homeless, by permitting better access and continuity of global care and patient-centered care, if we can adapt their practice's conditions for homeless' care managing.

Our first objective was to analyze the views of GPs about how they can provide care to HP and to explore which measures could influence these views. Secondarily, we aimed to:

- Quantify the exposure of GPs working in poor area to homelessness,
- Describe the knowledge of GPs working in poor area about homelessness,
- Identify and quantify the difficulties and barriers that GPs face in taking care of homeless people.

II. Methods

We performed an explanatory sequential study (qualitative, then quantitative, then qualitative phases), in Marseille (France), between November 2013 and March 2015.

Research by mixed methods were recently developed in the healthcare field, especially in public health and primary care (34–37). These methods involve integrating quantitative and qualitative data collection and analysis in a single study of one phenomenon, in order to obtain wealth, breadth and depth in the analyses of the data collected (38,39). These approaches rely on a pragmatic worldview and are of particular interest in complex or multidisciplinary areas, like systems organizations, precariousness (40), or homelessness (41,42).

In the present study, qualitative and quantitative data complemented each other:

- Phase 1 was qualitative and aimed to get a better understanding about the way GPs care for the homeless. For this phase we recruited GPs who were involved in homelessness. Our results highlighted relevant propositions to construct a closed questionnaire for phase 2.
- Phase 2 aimed to quantify exposure, knowledge, difficulties and involvement of GPs with a standard practice in the care of the homeless. We noticed divergent opinions about how much these GPs could contribute to the health of the homeless. It thus appeared relevant to understand why these PGs had divergent opinions, and why they seemed to be different from involved GP's opinion.
- That's why phase 3 aimed to characterize the views of GPs about their role in care giving to the homeless, and to explore deeper which factors could influence these views.

Last, but not lest, we propose a deeper reflection by discussing together the results of both phases.

The figure N°1 shows a synthetic description of our protocol, explained below.

1. Phase 1: building hypotheses with GPs involved in care giving for homeless people (qualitative)

1.1. Preliminary assumptions

We aimed to explore and understand practices and knowledge of GPs who already experienced managing care for homeless people. At this point, we thought that GPs could be a lever to improve the health of homeless people. Our questions to explore the views of doctors were built on the basis of a few elements from the literature and first exchanges with several GPs particularly involved in the care of the homeless. The researcher (who performed the interviews and analysis) had no experience in taking care of homeless people in France, before this phase.

1.2. Population and sampling

This phase targeted the GPs that were considered as "involved" in homelessness: GPs that were working in specialized centers for homeless people or precarious patients, or ambulatory GPs who

considered themselves involved in and/or exposed to homelessness. The first GPs were identified working in specialized care centers for precarious or homeless people. Three of them had already been identified to be particularly involved in homelessness by Dr Balique, who had established contact with them before the construction of this protocol. We, then, extended the sample using a "snowball" method. This method is justified when we want access to a specific population that is hard to find and to maximize chance of acceptance (43). We ensured the diversity of our sample by collecting data on age, sex, characteristics of GP's practice and patients. We stopped the inclusion when saturation of data had been reached (43). We did not perform repeat interviews. GPs were recruited from November 2013 to February 2014.

1.3. Data collection

Semi-structured interviews explored views of "involved" GPs about:

- health, access to health care and continuity of care for homeless people
- care giving by GPs for homeless people
- recovering medical histories and using shared electronic medical records for homeless people (we did not develop this last part on this research) (supplementary file N°1).

The same investigator (principal author of this article, master thesis student and resident in general practice at this time and who was presented as such) contacted the GPs firstly by phone, agreed to an appointment with them, then conducted the interviews in places chosen by each GP. The interviews were led after 2 pilot tests. They were passed face to face, recorded (only audio) and then fully transcribed. Field notes were made during and after the interviews, about attitudes of GPs, not recorded information and the scene of the interviews. All the interviews were anonymized as soon as they were concluded. An information letter was given to each GP and a written consent was obtained for publishing the results.

1.4. Analyses

We performed a content analysis on the transcriptions, using N-Vivo 10. This software is useful for qualitative analyses, enabling enhanced validity and rigor in the qualitative analysis process (44). Due to time and financial reasons, only one data coder performed the analyses (JEGO Maeva), but all the steps of the coding were followed and approved by Dr Balique. We didn't return the transcripts to the interviewed GPs, but we asked their opinion about our interpretation of data (during a meeting where we exposed the interpretation of the first 5 interviews, asking for their feedback when results have been written).

2. Phase 2: describing views of a representative sample of "standard" GPs (quantitative)

We performed a descriptive, cross-sectional study

2.1. Population and sampling

Phase 2 targeted GPs having a standard practice of family medicine in France. They could be exposed or involved in the health of homeless population, or not. In order to make the script more clear, we named these GPs "Standard GPs". We included GPs that were working in the center or in the north part of Marseille (which are the areas the most affected by homelessness), in private offices or health centers, working alone or in groups. Two public databases of GPs allowed us to identify all GPs who could meet the inclusion criteria. GPs with divergent information in these databases were contacted before randomization to confirm their eligibility. Then we randomized 150 GPs. They were recruited from June 2014 to July 2014.

2.2. Data Collection

We relied on our results from phase 1 (especially here: thematic about the perceived difficulties), and data of literature, to build the questionnaire for phase 2. We tested the questionnaire on 2 GPs before the real application. The questionnaire explored GPs' general characteristics, exposures, knowledge, levels of difficulties in care giving and views about how much they can contribute to the primary care of homeless people (supplementary file N°1). In order to increase the response rate, we proposed four modes of answer: phone, post mail, internet (with a secured link on surveymonkey) or face to face. An information letter was given to each GP.

2.3. Analyses

We performed descriptive analyses with SPSS V20, with means and confident intervals. Views of GPs were explored using likert scales. The main variable was the opinion of GPs about how much they could contribute to the care of homeless people.

3. Phase 3: Exploring views of "standard" GPs and understanding which conditions could influence their views (qualitative)

3.1. Preliminary assumptions

At this point we had more specific assumptions, given the results of phase 1 and 2. We aimed to get a deeper understanding of the phenomenon. We wanted to explore how the involvement and the effectiveness of GPs about taking care of homeless people should depend of organizational or individual factors (linked to patients and/or health professional). We expected to find which solutions could be relevant for GPs when they treat homeless people. The researcher had 2 working experiences in centers for socially deprived patients before this phase.

3.2. Population and sampling

Phase 3 targeted "standard" GPs as defined before. GPs were recruited from the list of those who responded to the questionnaire in phase 2, between December 2014 and March 2015. We used a quota sampling method to have a diversity based on age, sex, type of exercise (private/employed /mixed), having a secretariat or not, working alone or with other GPs at office and exposure to homeless people in their practice. We stopped the inclusion when saturation of data had been reached. We did not perform repeat interviews.

3.3. Data collection

We performed semi-structured interviews, exploring the views of GPs about: healthcare giving to homeless people, barriers and difficulties in achieving their contribution (Supplementary file N°1). The same investigator (principal author of this article, doctoral student and resident in general practice at this time, and who was presented as such) contacted the GPs firstly by phone, agreed to an appointment with them, then conducted the interviews in places chosen by each GP. The interviews were led after 2 pilot tests. They were passed face to face, recorded (only audio) and then fully transcribed. Field notes were made during and after the interviews, about attitudes of GPs, not recorded information, and the scene of the interviews. All the interviews were anonymized as soon as they were concluded. An information letter was given to each GP and a written consent was obtained for publishing the results.

3.4. Analyses

We performed an inductive thematic content analysis, using N-Vivo V10. Due to time and financial reasons, only one data coder performed the analyses (JEGO Maeva), but all the steps of the coding were followed and approved by Dr Balique. We did not return the transcripts to the interviewed GPs (due to a confidential policy), but we returned the results when they were written, before publication.

4. Ethics

All the parts of this study were registered on CNIL (French National Commission for Data Protection and Liberties). The Ethics committee of the Faculty of Medicine of Aix-Marseille approved this study.

III. Results

1. Phase 1: results from interviews on "involved GPs"

1.1. Characteristics of the sample and interview (Table 1)

We interviewed 19 GPs, mostly at their office (among the others, one was led at the GP's residence, one on a public area and two on the public health department). We obtained data saturation on the eighteenth interview, confirmed by the nineteenth. The average duration of the records was 1 hour. Five GPs refused to participate (lack of concern by homelessness for 2 GPs and lack of time for interview for other 3 of them). For 5 other GPs, we have never obtained a first contact. The sample was diversified by age, sex, type of exercise and structure of the exercise. Most of them (13) had a employed or mixed exercise. None of them declared receiving any patient with a high or very high social level.

Table N°1 – Characteristics of "involved GPs" (phase 1, n=19 GPs)

"Involved" GPs' characteristics	Effectives
Age (years)	
< 40	6
40 to 50	2
50 to 60	4
> 60	7
Sex category	
Men	11
Women	8
Current type of exercise	
Private	6
Employed	10
Mixed	3
Experienced structure for work* (Multiple Choice)	
Private medical office	11
Private medical office insuring a medical permanence	3
Health center	3
Specific centers for precarious or homeless people	10
Other	9
Social level of patients seen by GPs (Multiple Choice)	
Very low	13
Low	13
Medium	8
High	0
Very High	0

**Structure for work: where GPs were working or have already worked*

1.2. Coding tree

We developed three main categories on this phase (supplementary file N°2):

- Access and continuity of health care for homeless people
- Sharing of medical information when having medical record of homeless people
- Care for homeless people by general practitioners

This article exposes the main themes on this last category. The themes were derived from the data.

1.3. Three categories of difficulties identified in the care of the homeless (Table 2)

We identified three categories of difficulties for GPs in providing care to the homeless:

1- Personal difficulties, which included practical questions (Money / Time / Reception / management of consulting) and emotional or psychological consequences for the doctors while they care for homeless people;
2- Difficulties with care management: the care management was perceived as complex and heavy. GPs explained these difficulties mostly by: multiples issues for patients, difficulties in knowing medical data and over investment of doctors;
3- Difficulties in interacting with the homeless patients (physical appearance of homeless people, communication and relation with the patient, comprehension of the patient).

Personal obstacles and difficulties in healthcare management were identified by more GPs (respectively 18 and 16 GPs), than the difficulties in interacting with the homeless patients (14 GPs). When personal dilemmas were identified, they took an important part in the discourse of GPs (108 verbatims), showing that it had important consequences on their view about how they treated homeless people. We did not isolate in the speech of involved GPs the difficulties about managing social problems of the patients (social rights, life context and social condition, social rehabilitation). This was more exposed by these GPs as a limit for homeless people to access to health care, or staying in a stable follow-up relationship.

All GPs spoke of their limits and about how to correctly manage homeless people. They described these limits mostly as experts than they expressed to feel difficulties for that. Here, the first argument concerned limits about coordination and follow-up (limits due to the life context of homeless patients, unstable follow-up relationship, inappropriate answers of “standard” GPs, difficulties to identify supports as specialized centers, limits of relation between outpatient care and institutional care, lack of information about the medical past of homeless patients, limits due to the organization of private practice or common-law system). 8 GPs expressed that a correct follow-up was most of the time impossible for chronic diseases.

Table N°2 – Difficulties intented by « involved » GPs about taking care of a homeless in general practice

Categories of difficulties	Associated themes [arguments]	Example of verbatim transcript
Personal for GPs (16 GPs / *108 Verbatim*)	**Emotional/psychological** (13 GPs, 43 verbatims) [Uselessness / frustration / discouragement / Stress / weakening doctor status / discomfort / wearing out]	*« Being in a repeated failure without capacities to analyze this… Is hopeless. If we can make sense of it, working on it with partners, psychologist and social workers, it is a little bit different. »* *« They deprive doctors from their power »* *« Working with homeless is a school of frustration »*
	Practical (14 GPs, 65 verbatims) [Money / Time / Reception / management of consulting]	*« For a liberal doctor… it's complicated to manage. A doctor has the duty to ensure a secure place to receive other patients »* « *I cannot do that in private. I cannot… in fifteen minutes* »
Care management (18GPs / *60 verbatim*)	**Complexity** (11 GPs, 30 verbatims) [multiple issues / context of homelessness / Means required]	*« It's hard to put back these patients on common primary care. Even if you open social rights for them, they require more time, in terms of understanding, or because of multiple pathologies. That's why doctors have difficulties to care for them. »*
	Importance of care management required (5 GPs, 10 verbatims) [Over investment for doctors / lack of autonomy for patient]	*« But I cannot take this patient and go with her in hospital, right ? »* [About a pregnant patient who need to have a follow in hospital because of risk pregnancy]
	Retrieving medical informations (16 GPs, 20 verbatims)	*« So here, this is very important, we often do not know, we know nothing »*
Interaction with homeless patients (14 GPs / *34 verbatim*)	**Physical appearance** (10 GPs, 15 verbatims)	*« When they can't physically be like a person who has a home, already they are seen differently »*
	Communication / Relation (8 GPs, 11 verbatims)	*« When I treat a homeless person, sometimes I see from him a reaction to which I didn't expect »* *« We have difficulties to communicate with these persons, because of language barrier, but also because they are big outsiders »*
	Comprehension of patient (5 GPs, 8 verbatims) [observance, different views]	*« They don't do what we want them to do… There are resistances from them, associated with social problems or… [other problems].Doctors can misinterpret that. »*

1.4. Strengths of GPs and conditions to improve access and continuity of care for the homeless

A/ GPs as one of the solutions to improve access and continuity of care for the homeless

We asked the involved GPs about which solutions could improve the access and the continuity of care for homeless people. Family doctors or common law system were perceived as one of the solutions by 13 GPs (on the 19 interviewed). For 15 GPs, outpatient treatment could have a positive impact on homeless people.

They advanced three main arguments:

1. GPs can prevent and/or get out of precariousness :

It seemed that the contribution of GPs, as family doctors, could be really important when the patients are "*on the top of the slide*" (as one GP expressed in the focus group led after the first analyses). GPs are in a good position to know life context and environment of their patients, so that they are the best ones to screen vulnerability. The involved GPs mostly empowered themselves in preventing precariousness of their patients. Some sustained that GPs could help homeless people to get back to a social stability, to come back in the "system": *"I'm sure ... with health, taking into account health, it can be a way to get into rehabilitation and the return to socialization"* said one GP (working in "PASS psychiatrique", a specialized structure for the access to care for precarious people with psychiatric troubles), *"we (the GPs) are the entrance of the system… we guide into the system"* said another GP (a GP who had worked as a family doctor and was involved in medical consultations for homeless people into an emergency accommodation).

2. GPs as a solution for reducing stigmatization of homeless people:

Much more than a simple return to common-law system, GPs explained that being received in a common medical office, or experiencing hospitality and respect in healthcare encounters, can improve self-esteem of homeless people. It can become an integral part of care for homeless people. For example, a GP that works in a private medical office where he received some homeless people and also in a structure for treating patients of addictions, explained: *"I think that it can be gratifying to be in a waiting room ... with a mother and her baby, a little old lady and many other average persons".*

3. GPs are a strength for beginning and manage a stable follow-up

GPs felt they could create trust with homeless patients. This trust, combined to positive attitudes, was perceived as a solution to create a positive therapeutic relationship. Furthermore, general practitioners were described as referent, who can build a solid network around the patient, which can help to provide global care. GPs explained that these elements could permit a better use of care and a more stable follow-up relation for homeless people. However, they recalled the limits of the management of HP's healthcare for succeeding in the private activity.

A significant proportion of general practitioners (7 out of 19) spontaneously expressed that working with homeless people had a favorable impact on themselves. It could be for some of them a necessary activity, for others a type of care that suited them better, a challenge they took pleasure to meet, a better relationship, or a sense of accomplishment.

B/ Some adaptations are necessary when taking care of homeless people

Two major adaptations appeared necessary to succeed in improving access and continuity of primary care for homeless people:

- Firstly, a necessary adaptation for GPs to take care of homeless people :

All the « involved » GPs (19 GPs) explained in many fields how they must adapt their practice, behavior, or care organization if they want to be efficient in receiving and treating homeless people. We identified 4 categories of adaptation. Three of them reflected the difficulties identified by GPs:

1- Practical organization (19 GPs, 29 verbatim): by proposing an immediate response with no appointment for consultations, using a secretary at office, or practicing the "third-party payment" (which means that GPs are directly paid by insurance so that patients need not pay for the consultation);
2- Interaction with homeless patients (19 GPs, 175 verbatim) : by adapting GP's behavior when treating homeless people (showing respect and empathy, building a trusting relationship…), understanding differences in behavior of homeless patients, or taming the patient;
3- Management of care (19 GPs, 175 verbatim): by adapting the objectives of care, or adapting the practice to homeless patient life, with an active outreach strategy ("going to" the patient).

The fourth category concerned learning about specificities of precariousness or homelessness (6 GPs, 12 verbatim).

- Secondarily, the importance of a global, medico-psycho-social, management :

In the speeches of 15 GPs, social issues were more important than medical questions when they treated homeless patients, so that the social management became caring for the homeless.

Furthermore, 14 GPs explained how the social workers played an important role, to ensure access to health care, but also to treat other social problems of the homeless (food, housing). Furthermore, the importance of a multidisciplinary care management was expressed by 13 GPs. They explained here interest of working with a team of different professionals, including street team, social workers, and psychologists. 8 GPs expressed the need to build a network through the city to connect professionals who practice with homeless.

2. Phase 2: results from "standard" GPs who worked in area concerned by homelessness

2.1. Characteristics of the sample

Among the 150 doctors randomized, 6 were excluded because they did not meet the inclusion criteria and 38 did not respond to the questionnaire. 105 questionnaires were usable, so then the response rate was 73% (figure N°2). Most of the included GPs were older than 50 years (72%), and were male (74%). Only 9% of them had a employed or mixed practice. Our sample was a similar age and structure of practice profile to the 2014 average mix of GPs working in medical private office or health centers in France (45) . However, there were fewer females (26%) in our sample in comparison to the average (35.4%) (p = 0.04) (Table 3).

Table N°3 - Characteristics of GPs who responded to the questionnaire and comparison with french GPs (phase 2)

GPs' characteristics	French GPs in 2014 (medical private office and health center)*	GPs included (n=105)		
		Effectives	(%)	p
Age (years)				
< 40	9397 (14.0%)	12	(11.4%)	0.73
40 to 50	12418 (18.5%)	17	(16.2%)	
50 to 60	25121 (37.5%)	41	(39.0%)	
> 60	20000 (29.9%)	35	(33.3%)	
Sex category				
Men	43209 (64.5%)	78	(74.3%)	**0.04**
Women	23727 (35.4%)	27	(25.7%)	
Type of exercise				
Private	-	96	(91.4%)	
Employed /mixed		9	(8.6%)	
Structure for the exercise				
Medical private office	64302 (96.1%)	103	(98.1%)	0.28
Health center	2634 (3.9%)	2	(1.9%)	
Number of years passed in the structure				
< 5		10	(9.5%)	
5 to 10	-	14	(13.3%)	
> 10		81	(77.1%)	
Number of GPs in the structure				
Individual exercise	30869 (46.1%)	45	(42.9%)	0.56
Grouped exercise	36067 (53.9%)	60	(57.1%)	
Secretariat				
No	-	61	(58.1%)	
Yes		44	(41.9%)	
Number of patient seen by day				
< 20	-	30	(28.6%)	
20 to 30		43	(40.9%)	
> 30		32	(30.5%)	
Medium social level of patients currently seen				
1 (very low)	-	7	(6.7%)	
2 (low)		26	(25.0%)	
3 (middle)		65	(62.5%)	
4 (high)		6	(5.8%)	
5 (very high)		0	(0.0%)	

**Data concerning exercise of french GPs on January, 1St, 2014 (DREES)* (45)

2.2. Exposure and knowledges of "standard" GPs about precarious patients (Table 4)

A large majority of the GPs (79%) declared having already received a homeless at office. These GPs received very few homeless people (almost never or few often for 79.2% of them). If they were mostly exposed to moderate homelessness (insecure or inadequate housing for 62.8% of the GPs), a significant proportion of them (37.1%) were more likely to also receive roofless or houseless patients.

Few GPs (6.1%) underwent a specific training about precariousness. Most of the "standard" GPs had a low level of knowledge about homelessness and precariousness: only 1,2% of the sampled GPs knew the EPICES score, which is a standard score in France for screening precariousness in general practice (46,47), 28% of GPs knew the PASS system, which is the institutional system to ensure medical care and social help for people with no access to care in France; and 43% of GPs knew the telephone number for emergency housing service (SIAO) (Table 4).

Table N°4 - Exposition and knowledges of "Standard" GPs about homelessness

All GPs (n = 105)	Effectives (%)
Have you already received a homeless at office?	
Yes	83 (79.0%)
No	19 (18.1%)
Don't know	3 (2.9%)
GPs who have already received a homeless and responded part 2 of the questionnaire (n=82)	Effectives (%)
How often do you receive homeless people?	
1 (almost never)	37 (45.1%)
2	28 (34.1%)
3	11 (13.4%)
4	3 (3.7%)
5 (daily)	3 (3.7%)
Which categories of homeless patient do you receive more often?	
Roofless	4 (5.7%)
Houseless	22 (31.4%)
Insecure	33 (47.1%)
Inadequate	11 (15.7%)
Have you already attended a formation about precariousness?	
Yes	5 (6.1%)
Non	77 (93.9%)
Do you know the EPICES* score or other tools to measure precariousness?	
Yes	1 (1.2%)
No	81 (98.8%)
Are you aware of any accommodation for homeless people in Marseille ?	
Yes	56 (68.3%)
No	26 (31.7%)
Do you know what is a PASS?**	
Yes	23 (72.0%)
No	59 (28.0%)
What is the telephone number of SIAO*?**	
Correct answer	35 (43.2%)
Wrong or unknown answer	46 (56.8%)

**EPICES score is a valid screening tool for precariousness, which explore various dimension of precariousness by 11 questions and can be used in general practice*(46,47)

*** PASS is a social or medico-social centers developed in order to facilitate access to care for socially deprived persons. These centers offer free medical aid for primary care and social support for these people in public hospital.*

**** SIAO is an integrated area-based service for the reception and orientation of people facing homelessness. They were created in France in each department with the France's national strategy 2009 – 2012.*

2.3. Difficulties perceived by GPs in caring for homeless people (Table 5)

Social management when caring for homeless people emerged as the greatest difficulty for "standard" GPs when treating the homeless (mean=3.95/5 ± 0.98, on a Likert scale between 1 [no difficulty] and 5 [very high difficulties]). Other significant difficulties were related to (in decreasing order): Retrieving medical information (mean=3.78/5 ± 1.05), management of patient's compliance (mean=3.67/5 ± 0.99), loneliness in practice (mean=3.45/5 ± 1.22), and excessive time necessary for consultation (mean= 3.25/5 ± 1.12) (Table 5).

Table N°5 – quantification of the levels of difficulties felt on Likert scale by "standard" GPs who have already received homeless patients, when they take care of these patients (n=82 GPs)

Difficulties	Mean*	SD**	IC95***
Practical			
Time necessary	3.25	1.12	[3.00 – 3.50]
Patient's reception	2.60	1.29	[2.31 – 2.88]
Financial (volunteer work)	2.19	1.25	[1.91 – 2.46]
Care management			
Complexity	3.00	1.17	[2.74 – 3.26]
Retrieving medical information	3.78	1.05	[3.55 – 4.01]
Social management	3.95	0.98	[3.74 – 4.17]
Interaction with patients			
Patient's compliance	3.67	0.99	[3.45 – 3.89]
Patient's behavior	2.78	1.21	[2.51 – 3.05]
Patient's physical appearance	2.74	1.28	[2.46 – 3.02]
Emotional			
Frustration of GPs	2.80	1.17	[2.55 – 3.06]
Depreciation of GPs	1.69	1.00	[1.46 – 1.91]
Loneliness in practice	3.45	1.22	[3.18 – 3.72]

**Mean of GPs' answers on Likert scale (between 1=none and 5=very high difficulties)*

***SD: Standard deviation*

****IC95: 95% confidence interval*

2.4. Divergent answers regarding how GPs could contribute to the care of homeless people

Views of GPs about how much they could contribute to the homeless people care were divergent, with a mean of 3.05/5 ± 1.04 on Likert scale (between 1 for "not at all" and 5 for "very much"). Some GPs wrote explanations for this question: a significant part of them talked about insufficient means, or necessity to adapt the health system and primary health care organization for permitting such a contribution for ambulatory GPs. Only two of them said that it wasn't a question concerning GPs or that some GPs wouldn't accept to contribute because of their personal position.

3. Phase 3: Explaining "standard" GP's views about their contribution to health care for homeless people (qualitative analysis on a subsample of "standard" GPs)

3.1. Characteristics of the subsample and interview

We included 14 GPs, who were diversified by sex, age, type of practice, number of doctors in the office, secretary and having, or not, received a homeless patient in the past. Interviews were mostly passed at their office (except 1 which was passed in a public area). The average duration of the records was 29 minutes. GPs who refused to participate explained their refusal by lack of time for the interview. We obtained data saturation on the thirteenth interview, confirmed by the fourteenth. 1 GP delayed the interview but was not included because data saturation had been reached.

We identified 4 profiles of GPs:

1- **GPs regularly involved in and who had an experience in the care management of homeless** (2 GPs): they self-reported a good knowledge of homelessness and many relations to coordinate the care of homeless patients. They recruited homeless because of this profile.
2- **GPs that were exposed to homelessness and felt concerned about the problem** (3 GPs): they worked on particular deprived areas, or had mixed activities concerning homelessness or precariousness.
3- **GPs that were not exposed to homelessness but felt concerned** (4 GPs): they worked on suburb(s) areas and were not exposed to the roofless. They reported that they almost never received homeless patients without explaining why.
4- **GPs that were not exposed to homelessness and had negative views** (5 GPs): they worked also in suburban areas. They showed negative attitudes and views which could prevent homeless patients from consulting again these doctors.

3.2. Coding tree

We developed four main categories on this phase (supplementary file N°2):

- Health system organization
- View of general practitioners about homeless people
- Role of general practitioners when caring for homeless people
- Care for homeless people by general practitioners

The themes were derived from the data.

3.3. Conditions for "standard" GPs to be involved in treating the homeless (Figure N°3)

The qualitative analysis showed that maintaining a stable follow-up was a major condition for GPs to contribute effectively to the care of homeless people (11 GPs, 26 verbatim):

- For some GPs, the presence of stable follow-up was the reason why they could contribute to the care of homeless people, as shown in this extract: *"Yes [answering the question if GP could contribute, bring something positive to the health of homeless people], because most of the time I see, as I said, finally they come back […] They come back to see me […] they choose me as a family doctor".*
- For other GPs, a stable follow-up was the most cited condition to enable participation in the care of homeless people: *"it would be necessary to develop a kind of coercion which led them to a little loyalty. Here we can build something"*
- The last GPs cited failure of follow-up to argue why they couldn't contribute to the care of homeless people.

As shown on figure N°3, we identified three main factors that influenced the possibility of maintaining a stable follow-up: attributes of patients, care management conducted by GPs and health system organization.

The factors that we identified in the speech of GPs were better linked to GPs' care management and to health care organization, than to homeless patients themselves.

- Concerning health organization: social management, multidisciplinary practice on a team, backing and active outreach were mentioned as conditions to enhance the follow-up of homeless patients; social issues posed the greatest barrier for these GPs (access to social rights, and housing).

- Concerning GPs : geographic proximity, attitude, trust in the relationship, education on health and adaptation in the care giving by GP were mentioned as conditions that could enhance the follow-up of homeless patients; negative attitudes and lack of active outreach for the homeless patients were the most barriers to the success of follow-up identified.

Having a stable follow-up relationship seemed to enhance views and attitudes of GPs. Success of a trust-based relationship and recovering social rights, were all noted as the elements of a virtuous circle created by the follow-up.

Two others conditions were identified for GPs to effectively contribute to the care of homeless people:

- Working in closely relation with social workers (9 GPs, 12 verbatim);
- Adaptation of GPs with better knowledge about homelessness (3 GPs, 4 verbatim).

These conditions seemed also linked to the success or failure of a stable follow-up as shown on figure N°3.

IV. Discussion

1. Main result: GPs could effectively contribute to the care for homeless people if we adapted the conditions of their practice

In this study, almost 80% of general practitioners (consistent use of GP) who worked in the center or north part of Marseille had already been exposed to homeless patients. Analyzing the three parts of this study, we showed that conditions of GP's practice were a major factor which influenced the views of GPs regarding how they could contribute to care giving for homeless people. Indeed, in the quantitative part, "standard" GPs felt the most difficulties in the care giving for the homeless due to: social management, retrieving medical information, management of observance of homeless patient, loneliness in practice, time necessary for consultation and complexity of care management. All these items could be improved by a better organization of primary care, coordination and organization of general practice. A study led in UK in 1996 has showed similar results, of the social problems as the first ones perceived by GPs when they cared for homeless people (90% of GPs agreed), followed by lack of medical records, complex health problems and alcohol or substance misuse (32). We didn't directly ask the "standard" GPs about substance misuse during the questionnaire, but behavior of homeless patients wasn't perceived as an important difficulty. However, during the phase 3 (qualitative), when "standard" GPs perceived difficulties concerning patients with problems of substance misuse, it was a strong barrier for them to accept these patients. In the qualitative analysis led on "standard" GPs, we identified that a stable follow-up relationship between homeless patients and GPs was a central condition for GPs to be pertinent and effective in the care management of the homeless. This condition seemed to be closer linked to characteristics of the health system organization or characteristics of GPs' activity and behavior than the patients themselves. After analyzing back the discourse of "involved" GPs, we found that "involved" GPs viewed the follow-up as something difficult to obtain, but a responsibility and challenge for them in the care giving for the homeless. So we can expect to improve this follow-up by adapting the conditions of practice for GPs. We need more data to explore if the conditions of practice influenced GPs or if view and positions of GPs led them to choose this specific kind of practice. It would be interesting to complete these results by a study comparing a group of employed or mixed GPs and a group of private GPs. We also have to consider the differences between social aspects experienced by GP and homeless people. It

has been described that being recognized as different members of social classes, or cultural differences (called by E. Carde "differentiation"), can influence the difficulties or views of health professionals about taking care of patients (48–50). We asked the involved GPs why they had engaged themselves in homelessness: only 2 of them spoke about their social origin (worker class) or familial past (alcohol addiction of his father). They mostly expressed a personal involvement due to moral values, and/or generated by their professional career. However, we didn't have more details about social origin of the GPs who were interviewed, in phase 1 or 3, or who answered the questionnaire.

2. Strengths and weaknesses of this study:

The choice of a mixed methods design was justified here by the complex and sensitive nature of our research object. With the integration of multiple perspectives of different actors (GPs who were involved in homelessness and GPs with a standard practice) and quantitative and qualitative data collection, we aimed to provide a more complete and rich understanding of a phenomenon (36,38,51,52). Furthermore, the identification of areas of convergence or divergence among results can increase the rigor of the study and usefulness of the findings (53). Our "step by step" process permitted to obtain a complete, rich and credible picture about the question of managing homeless people by GPs (54).

Qualitative methods involve some subjectivity of the investigator during the analysis data process. Due to financial and time reasons, we were unable to perform the analyses with another investigator. In order to limit the risk of irrelevant interpretations (55), the thematic coding was shared between the researcher and director of this research on each important step of it's transformation; here, the use of a software (N-vivo) enhanced the rigor of the analyses (55,56). To enhance the rigor of our interpretation process, we discussed our conclusions with the actors of this research (interviewed GPs) on different times: during a meeting after the analysis of the firsts 5 interview for phase 1 and asking for a feedback about written results of phases 1 and 3. The reflexing process of the researcher was improved by listening opinions and experiences of other external actors during the whole process of data collection and analyses and an involvement in a charitable association ("Médecins du Monde") as a participant observation process throughout the analysis of phase 1. The intellectual effort and the multiples interpretations of actors were written as much as possible by the researcher (57,58). This progressive and interactive process has improved the method and the understanding of the results of each phase.

For quantitative part, we chose to include GPs who worked in the suburbs which were more affected by precariousness, in order to address the problem on a concerned population and to follow a local interventional program for homeless in Marseille (59). The sampling process was rigorous so we can consider our sample to be representative of GPs working in the suburbs affected by precariousness. That can explain why our sample was not completely representative of French GPs: we do not want to extend these data to all GPs, but only to GPs who work in urban area and in low-income suburbs. We obtained a good level of response (74%) if we compare to similar design led on close themes (31,32). There was no difference between respondents and non-respondents concerning work area and sex (the only data we had for non-respondents). However, we can suspect that GPs who didn't answer the questionnaire had more negative views about homeless people and GP's role in their care. If the data collection has been diversified to improve the proportion of respondents, it could

influence the response of GPs, in particular when it was conducted “face to face”. Using a standardized questionnaire and the same investigator should have reduced this limit.

3. Operational propositions for an efficient medical care in primary care for homeless people: how we can adapt the ambulatory condition of GPs’ exercise

Regarding to our results and data from other studies, we propose some specific solutions for GPs to improve access and continuity of care for homeless people.

3.1. A grouped and multidisciplinary practice

The importance of a multidisciplinary and integrated approach (proposing for example housing on the same time than health care) for homeless people has already been described (25,60). Concerning specifically GPs : GPs’ attitudes toward homeless people has been identified on a qualitative study as the major barrier to give access to primary care for homeless people (61). As it has been described, the behavior of health workers with the homeless was modified when they worked in a multidisciplinary structure (62), we can expect that this kind of adaptation could be beneficial to personal experience of care management for GPs (63) and enhance positive attitudes which can lead to more convenient access to care for the homeless.

3.2. Associate medical, social and psychological care, with the development of closer relations between GPs and social workers

Our study showed how social issues become a part of care when GPs have to care for homeless people. Other studies led on precarious patients revealed the necessity to develop closer relationships between health workers and social workers (30), so we can expect that it is the same need when caring for homeless patients. In France, « microstructures » have developed this multidisciplinary scheme, in general practice offices, that integrates a presence of psychologist and social workers in a private medical office for 2 hours per week. These programs concerned drug-addicted patients who lived in highly precarious conditions. This scheme enhanced access and continuity of care concerning prevention and chronic diseases for the patients who were included (64,65).

3.3. Improving knowledge of GPs about precariousness and homelessness

In qualitative analyses, the lack of knowledge of GPs about social questions and the lack of experience of GPs in homelessness seemed to influence their behavior and capacity to adapt their management for homeless people. A lack of knowledge about precariousness has already been highlighted in other French studies, where GPs identified training needs for multidisciplinary approach and social questions (31,66,67). The necessity to improve knowledge and develop training of GPs about homelessness has also been discussed by Riley et Al.: for them, it’s one of the major solution (with support of primary care trusts) to make the “full integration of homeless people into mainstream primary care services” occur (24). Both “standard” and specialized GPs experienced difficulties when caring for the homeless, struggling to maintain a stable follow-up relationship. The “involved” GPs tended to have more positive views over the homeless patients, they showed a better control of the complex situations of these patients and saw a successful follow-up relationship more as the responsibility of GPs to make it possible than as a condition for GPs to take care for homeless people.

3.4. Considerate non-medical time in remuneration of GPs

It's necessary to adapt the remuneration mode for private GPs, so that they consider the complexity of the care giving for homeless. This way they would be able to spend more time for active outreach, patient support, developing a care relation and coordination of care. These adaptations are described as solutions to improve the use of health system by the homeless, by enhancing care requests, providing them greater self-confidence and enhancing the trust of the homeless patients in the health care system (68).

3.5. Develop a partnership between tailored and non-tailored systems

Lack of knowledge and difficulties for GPs to communicate with social or other specialized centers has been described in a French mixed study led on GPs about precarious patients (31). Lester et Al., analyzed the limits of tailored centers for the homeless, describing a similar model, which can "create a bridge between separation and integration, opening up access to mainstream care for the majority of homeless people and also providing immediate transitional primary health care and social care services through interested GPs" (30). As some GPs explained it in our interviews, dedicated structures, which answer to social needs for homeless people, could be the first contact in care for homeless. The homeless could secondarily be sent to "standard" GPs when they had recovered sufficient social rights and personal capacity to follow an adequate itinerary of care. Wright and Al. recall that a specialized general practice for homeless people is ideal to engage them in care and guide them in "appropriate use of primary care"; after this, the patient can be "encouraged to register with a mainstream practice". But Wright and Al. remember that "this switch can be difficult not only for patients but also for doctors when there is a strong personal commitment" (69). It's necessary to identify GPs who could engage in the care of homeless people, offer them training about precariousness, and foster closer collaboration their practices and those of the dedicated system. These tailored structures could also become a relay for crisis management or a support for GPs who need assistance in the care managing of homeless people.

V. Conclusion

General practitioners could effectively contribute to the improvement of the homeless people's health, if organizational and material conditions of their practices were adapted properly. It's necessary to develop a grouped and multidisciplinary offering, permitting an integrated medico-psycho-social approach. These results will enable the construction of a new model of primary care organization to improve access to healthcare for homeless people.

Contributorship statement

JEGO-SABLIER Maeva: designed the study, performed data collection on the 3 phases (all interviews, and questionnaires), performed the analyses, drafted the article, and approved the final version;
GRASSINEAU Dominique: co-directed the third part of this study, contributed to the conception of the work and interpretation of data, revised the article, and approved the final version;
BALIQUE Hubert: directed this whole work, gave advices for designing the study and analyses, revised the article, and approved the final version;
SAMBUC Roland: gave advices for designing the study, revised the article, and approved the final version;
LOUNDOU Anderson: gave advices for designing the study, supported the data analyses, revised the article, and approved the final version;
DAGUZAN Alexandre: participated to the building of the research question, was a support to enhance the methodology of this study (at each methodological step), gave advices concerning the data analysis process, revised the article for editing the methods and discussion about mixed methods, and approved the final version.
GENTILE Gaetan: contributed to the conception of the work and interpretation of data, revised the article, and approved the final version;
GENTILE Stéphanie: tutor of this whole work, gave advices to get research scholarship, gave advices for designing the study and analyses, revised the article, and approved the final version.

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PETIT Juny: writing assistance (language editing)
WELCH Adam: writing assistance (language editing)
POPESCU Diana-Elena: writing assistance (language editing)

Competing interests

The authors declare having no competing interest

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Data sharing statement

- A doctoral thesis (medicine) was passed by JEGO Maeva on November, 23th, 2015, which treated about these data and other: "Place du médecin généraliste dans la prise en charge des personnes sans chez-soi".

- An Oral communication was made about data from the same study, in the CMGF ("Congrès de la Médecine Générale de France") on March 2016, in Paris.

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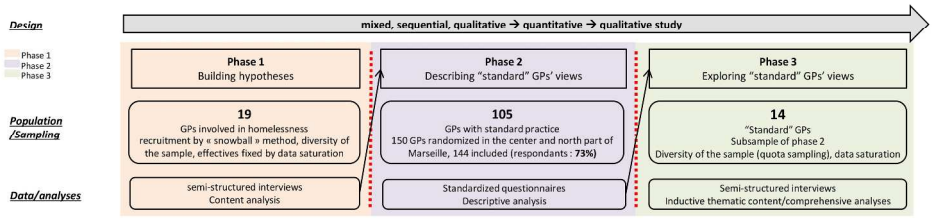


Figure N°1 - Study protocol‼ ┼ ‼ ┼

Orange - Phase 1‼ ┼
Violet - phase 2‼ ┼
Green - phase 3
figure N°1
300x225mm (300 x 300 DPI)

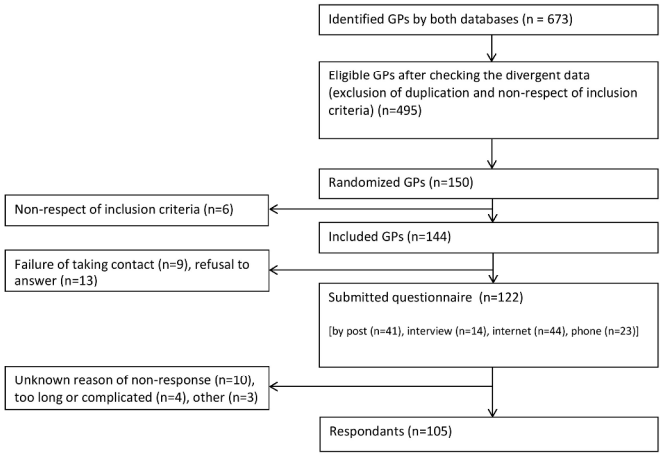


Figure N°2 - Flow chart ("standard GPs", phase 2)
figure N°2
297x210mm (300 x 300 DPI)

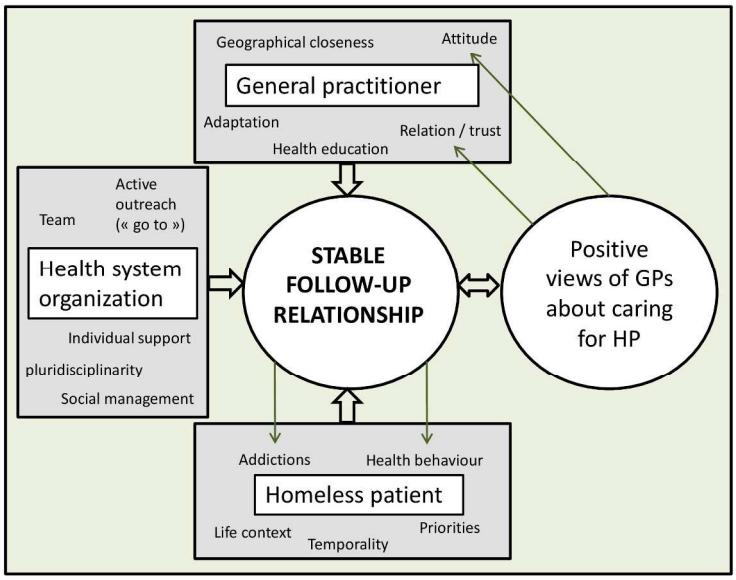


Figure N°3 - Identified factors to influence the odds of building a stable follow-up of homeless patients (interview with "standard" GPs, phase 3)
figure N°3
254x190mm (300 x 300 DPI)

Interview guide for phase 1

1/ Initial contact:

- **For which reasons did you engage in managing the homeless?**

Identify which profiles and/or life histories have been favorable for an engagement in social medicine

2/ Views about homelessness, whole issues:

- **As a general practitioner, in your professional experience, of which problems do you think that the homeless people suffer (regarding their life, or health)?**

Explore issues of homeless people perceived by the doctors.

➔ *[expected: Access to health care ? Continuity of care? health? Administrative issues? Definition of homelessness…]*

3/ Views about homelessness – issues concerning the management of homeless people, and effective answers:

- **In your opinion, which difficulties can face general practitioners when they take care of homeless people (ambulatory GPs, GPs working in an establishment, or yourself)?**

Research capacity limits of GP to receive homeless people at medical office

➔ *[expected: Loneliness ? medical consultations ? diseases ? concept of network ?...]*

- **In your opinion, what type of difficulties do homeless people have to face concerning their access to health care?**
- **And what do you think about the continuity of health care for homeless people?**

- **More specifically, do you have difficulties when retrieving medical information about for your homeless patients?**

4/ Solutions to improve health management of homeless people (access to health care, quality of care, continuity of health care)

- **In your opinion, what can we do to improve access to health care for homeless people?**
- **And what can we do to improve continuity of care for homeless people?**

5/ Specific solution: an electronic health record [this part wasn't studied for this research]

6/ Specific solution: health network [optional]

- **What do you think about developing a network for homeless people?**

7 / Other elements to add?

Questionnaire for phase 2

PART 1 **N° ID Questionnaire:**
Date:

I. General

1. Age : ☐ < 30 years old ☐ 30-40 ☐ 40-50 ☐ 50-60 ☐ > 60 years old
2. You are : ☐ A men ☐ A women
3. What is your type of practice? (Only one answer)
   ☐ Employed ☐ Private ☐ Mixed ☐ Other
4. Structure for main exercise :

   → In what kind of structure do you mostly work? (only one answer)
   ☐ Medical private office ("Cabinet medical")
   ☐ Medical private office with multidisciplinary and grouped actions ("Maison de santé pluridisciplinaire")
   ☐ Medical private office working round the-clock-care ("Permanence médicale")
   ☐ Salaried health center ("Centre de santé")
   ☐ Other

   → Which district does this structure belong to? (write below)

   → How long have you been working in this structure?
   ☐ < 5 years ☐ 5-10 years ☐ > 10 years
5. How many GPs are working in this structure?
   ☐ I'm alone ☐ we are several
6. Do you have a medical secretary?
   ☐ Yes, at the office ☐ Yes, telephonic ☐ No
7. What is the average number of patients that you see in a day ?
   ☐ < 20 ☐ 20 to 30 ☐ > 30
8. Between 1 and 5, how would you describe the social level of your patients (1= very low level (high precariousness), 5= very high level)
   ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Part 2 to part 4: treated about general knowledge and views about the French electronic health record (Dossier Médical Personnel, DMP) and wasn't analysed on this research.

V. Care management of homeless people

19. Have you already treated a homeless at the office? (By homeless people we mean: roofless, but also people living houseless, or in inadequate or insecure housing (squat, trailer park, mobile-home, hostel, people living with family members or friends, overcrowded housing…)

    ☐ YES ☐ NO ☐ Don't Know

Do you have any further remarks?

PART 2 (Regards only GPs who have already treated homeless people at office)

N° ID questionnaire:……

Date:……..

I. Some additional details about your practice :

20. Do you have other activities treating the issues of precariousness in your practice ?

☐ Yes ☐ No

➔ 1. a. If yes, mostly in which structure? (only 1 answer)

☐ Out of charge consultations for women and children (« PMI »)

☐ Specific center for people with addiction (« CSAPA / CAARUD /Autre structure orientée dans la prise en charge addictologique »)

☐ Other low-threshold centers / charitable associations (« Autres structures d'accès bas seuil / Associations bénévoles ou caritatives »)

☐ Hospital :PASS, mobile team (« Hôpital (PASS, équipes mobiles…) »)

☐ Other (« Autre »):

II. Access to technology at medical office : this part wasn't analyzed on this research

III. Experience and knowledge about precariousness

24. During your career or your studies, have you attended a formation about precariousness?

☐ Yes ☐ No

→ 24. a. If yes, what was (were) it (they) (several answers possible)?

☐ Practical training during medicine studies

☐ Theoretical training during medicine studies

☐ Additional diploma

(Precise:.....)

☐ Other

(Precise: .....)

25. Do you know the EPICES score (Evaluation de la Précarité et des Inégalités de santé dans les Centres d'Examens de Santé) or other tools to measure precariousness in medical practice ?

☐ Yes ☐ No

26. Do you know some accommodation for homeless people in Marseille?

☐ Yes ☐ No

27. Do you know what a PASS is?

☐ Yes ☐ No

28. **What is the telephone number of SIAO? (write it, or tick the box « don't know »)**

☐ Don't know

IV. Managing the health care of homeless people

Preliminary information: we consider as homeless people for this study:

- *Roofless : people living rough or people in emergency accommodation*
- *Houseless : people in accommodation for the homeless, people in accommodation for immigrants, people receiving longer-term support (due to homelessness) on long stay accommodation)*

- *Insecure housing: for example, living with family/friends, no legal (sub)tenancy, illegal occupation of land…*
- *Inadequate housing: trailer park, mobile-homes, non-conventional building, temporary structure, extreme over-crowding…*

29. Between 1 (almost never) and 5 (daily), how often do you treat a homeless patient ?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

30. Which kind of homeless patient do you mostly receive at your office? (only 1 answer)

☐ Roofless: people living rough or people in emergency accommodation

☐ Houseless: people in accommodation for the homeless, people in accommodation for immigrants, people receiving longer-term support (due to homelessness) on long stay accommodation)

☐ Insecure housing: for example, living with family/friends, no legal (sub)tenancy, illegal occupation of land…

☐ Inadequate housing: trailer park, mobile-homes, non-conventional building, temporary structure, extreme over-crowding…

☐ Other (precise):

31. Among the propositions below, about managing homeless people, how much difficulties do you encounter in your professional experience, between 1 and 5 ? (please tick the good box, 1=none difficultie, 5 = very high difficulties)

« I encounter difficulties… »	**1**	**2**	**3**	**4**	**5**
12.a. Because care management is complex	☐	☐	☐	☐	☐
12.b. When searching the medical history of my homeless patients	☐	☐	☐	☐	☐
12.c. Because managing my homeless patient needs too much time	☐	☐	☐	☐	☐
12.d. Because I have to manage alone all my homeless patients (no relay)	☐	☐	☐	☐	☐
12.e. When managing social issues of my homeless patients	☐	☐	☐	☐	☐
12.f. When managing my homeless patient's compliance	☐	☐	☐	☐	☐
12.g. With charitable or unpayed consultations	☐	☐	☐	☐	☐
12.h. When receiving homeless patients at the office, because of my other patients	☐	☐	☐	☐	☐
12.i. Because of their physical appearance (look, smell…)	☐	☐	☐	☐	☐
12.j. Because of their behavior, or attitudes that I don't understand	☐	☐	☐	☐	☐
12.k. Because I feel frustration in their care management	☐	☐	☐	☐	☐
12.l. Because I feel depreciated when I manage homeless patient	☐	☐	☐	☐	☐
Other :	☐	☐	☐	☐	☐

32. **Between 1 and 5 (5 = very much, 1 = not at all), how much do you think that general practitioners could contribute to the homeless people care?**

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

The last part (part 5) of the questionnaire explores the GPs view of an Electronic Health Record for managing the health care of homeless people. It was not analyzed on this research.

Further remarks?

Thank you!

Interview guide for phase 3 (translation from French)

First part: introduction

I am a resident in general practice, and I work, for my doctoral thesis, on the question of general practitioners and homeless people.

For this study, we name homeless people: precarious people, who don't have a personal and decent housing, then who live roofless, in short or longer-term accommodation for homeless, or in inadequate housing.

This interview will be recorded, if you accept that. It will stay confidential. The interview will be anonymized, and we won't conserve any identification data.

I'm here to listen to you and understand. You can express all you need.

Before we begin, do you need any further information of this interview?

Second part: the interview

I. Introducing the entire problem

- Have you already treated homeless people at your office?
  - If no: address the questions about refusal and barriers to accept/treat homeless people
  - If yes: how would you describe your homeless patients?

- [If yes] Have you felt some differences between homeless people and other patients when treating them?
  - If yes, what difficulties?

[expected: Adaptation necessary ? / training? / Specificities in care management? / Addiction and psychiatrics diseases over-represented? / Life context? / Poorer health status?]

II. The general practitioner : role and limits

- In your opinion, do general practitioners (can) contribute to the care of homeless people? Why?
  - To engage the questions about difficulties and solutions
  - Other approach: do general practitioners (can) bring something ?/have a role to play, in the care management of homeless people

  [expected : current means / Difficulties perceived by the interviewed GP or enounced for other GPs/ views about homelessness / refusal…]

- Do you personally feel difficulties when managing homeless people (reminder, if not developed before) [If never received: do you suspect that there would be some difficulties…]
  - If yes, what difficulties?
  - If no, why?

- Do you think that there are some barriers which make that GPs can't or don't want to receive homeless people?
  - In your own practice, have you already been in a situation where you couldn't or didn't want to receive homeless people?

III. Solutions

- Which measures could help you, as a general practitioner, to face these difficulties? (reminder, if not developed before)

- Which measures could improve the care management for homeless people? Quelles mesures pourraient selon vous améliorer la prise en charge de ces patients ? (reminder, if not developed before) [optional if the GP never received homeless people]

- Views and needs about a new organization for improving the health of homeless people (reminder, if not developed before) [optional if the GP never received homeless people]
  - If you had to design an ideal organization of health care to improve care management and health for homeless people, how would you describe it?

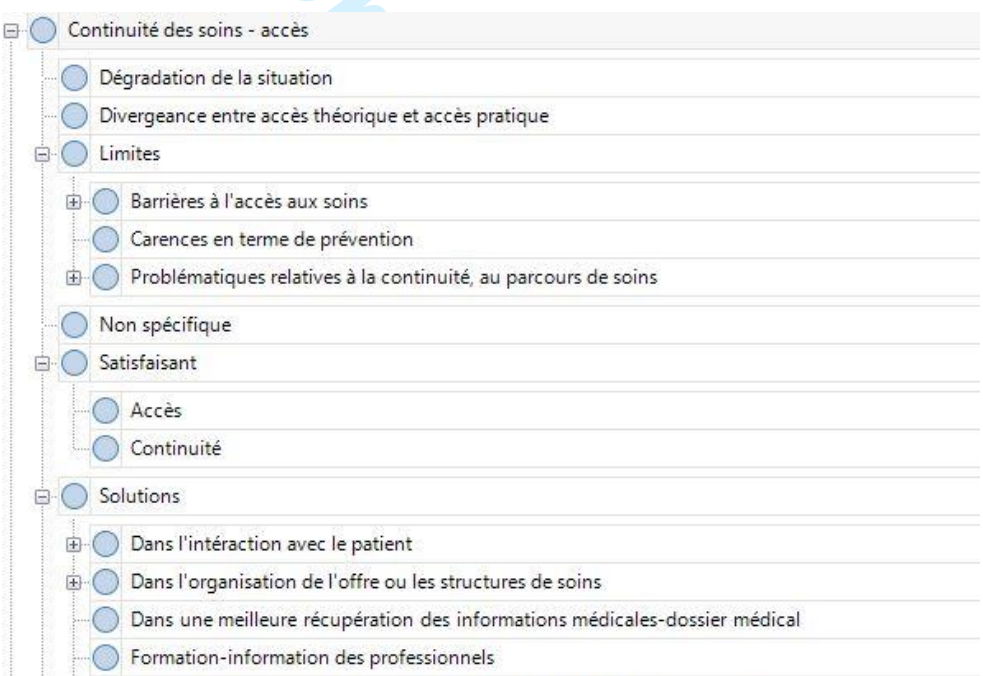
- Do you know structures that you can contact to help you with managing the health of your homeless patients?

Annex 2 – Extracts from the coding trees

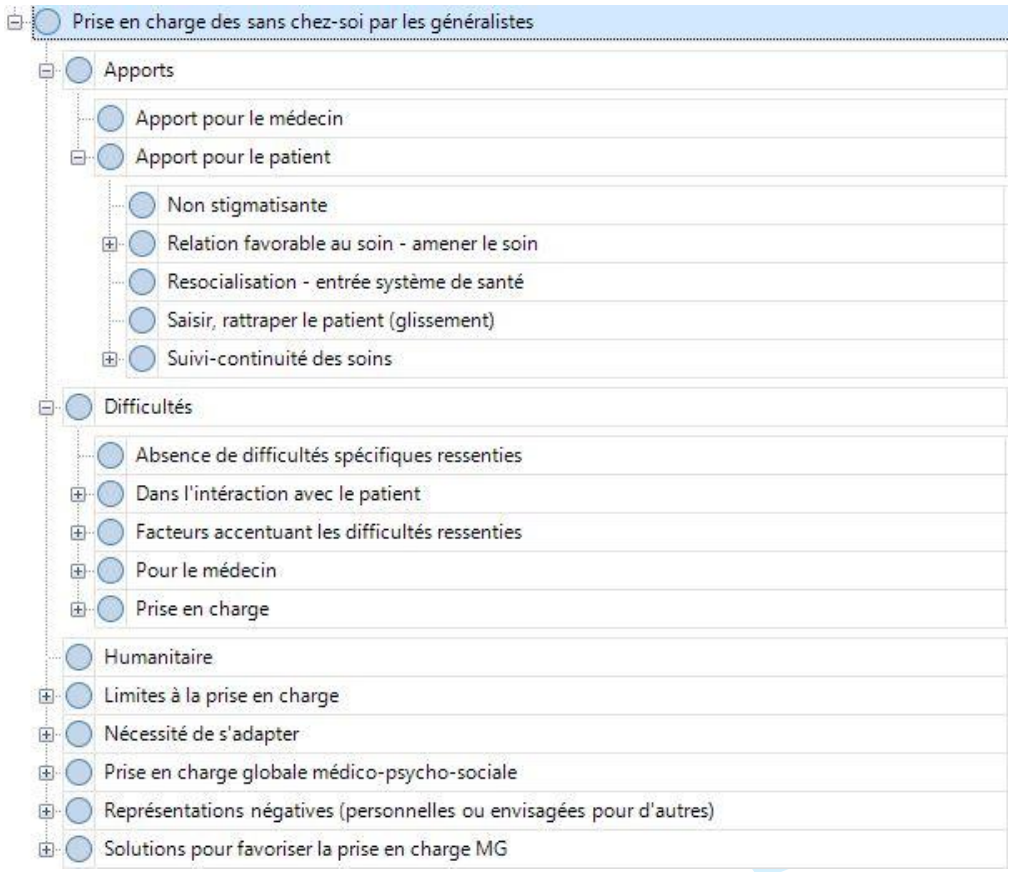
(phase 1 and phase 3, in french)

I. Phase 1 : interviews with « involved » GPs

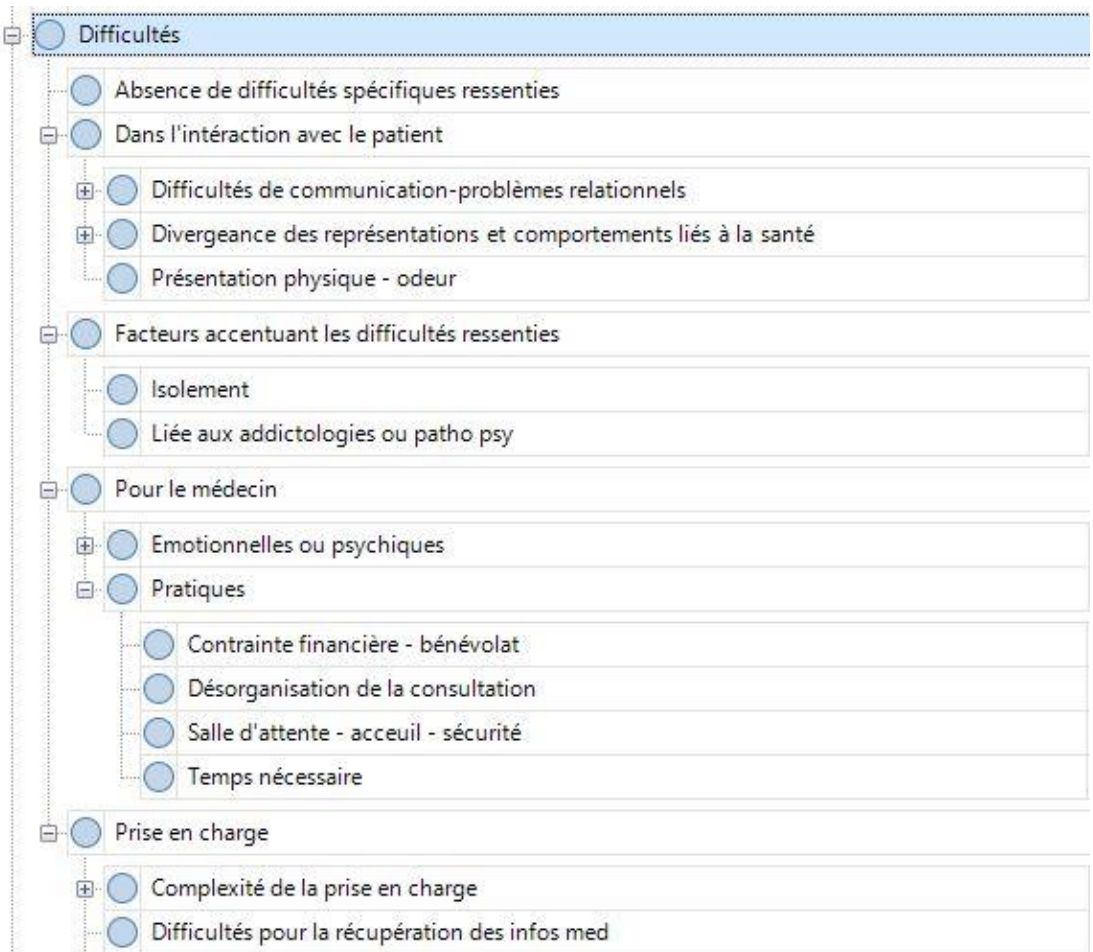
1) *Phase 1, overview 2 : access and continuity of care, overview (« involved » GPs)*



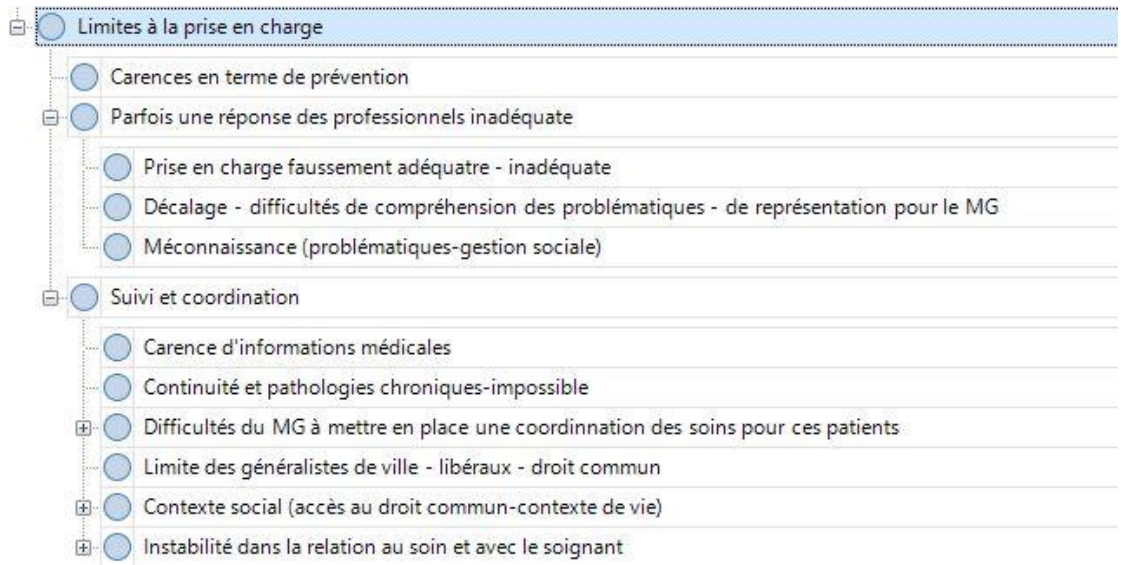
2) *Phase 1, overview 1 : How the involved GPs care for HP, overview (« involved » GPs)*



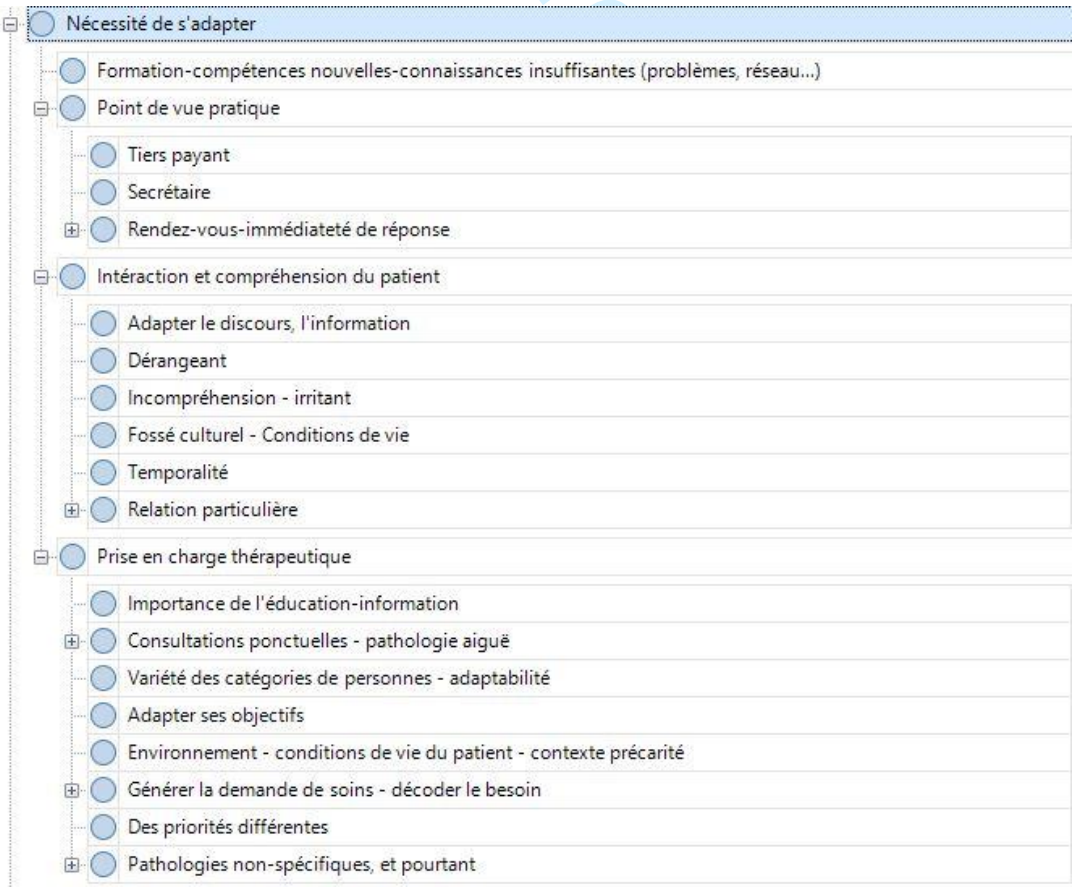
3) *Phase 1, Focus 1 -Difficulties when caring for HP - views of « involved » GPS*



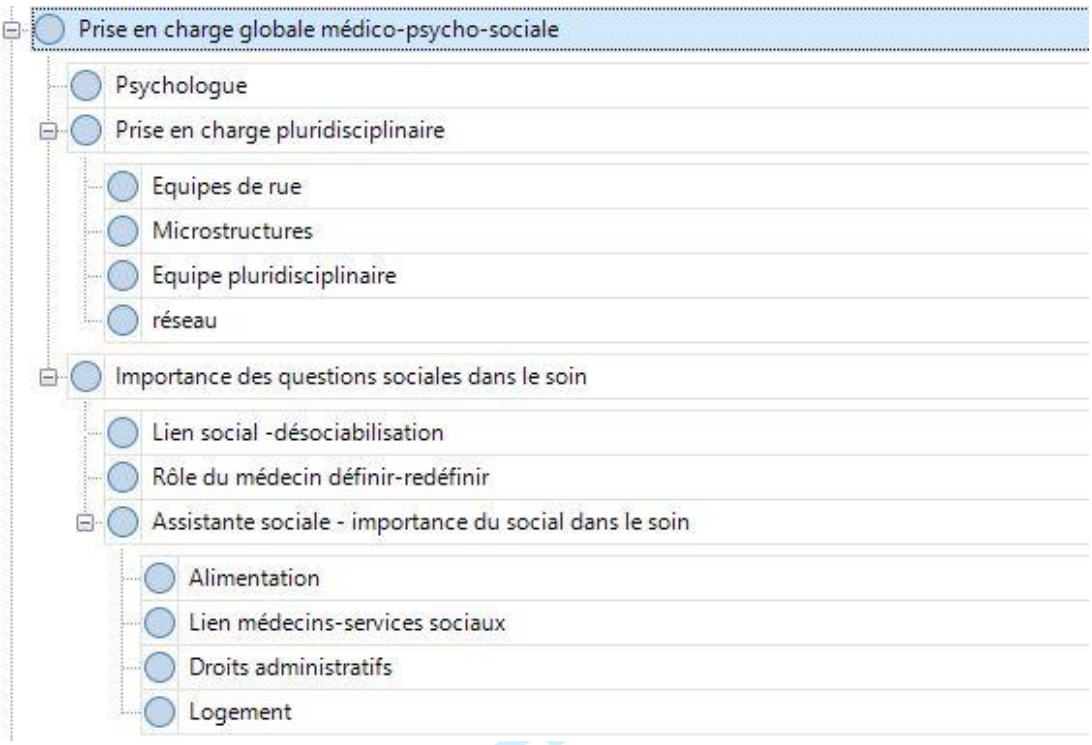
4) Phase 1, focus 2 - Barriers for treating well HP



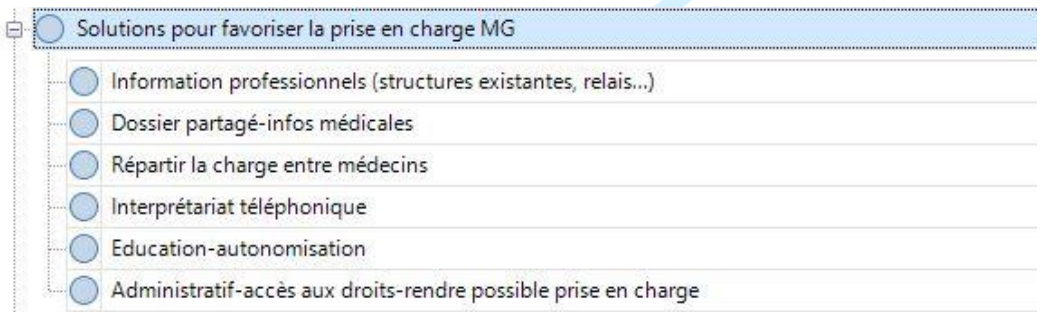
5) Phase 1, Focus 3 - GPs may adapt their practice when they care for HP



6) Phase 1, focus 4 - The importance of a global medico-psycho-social care

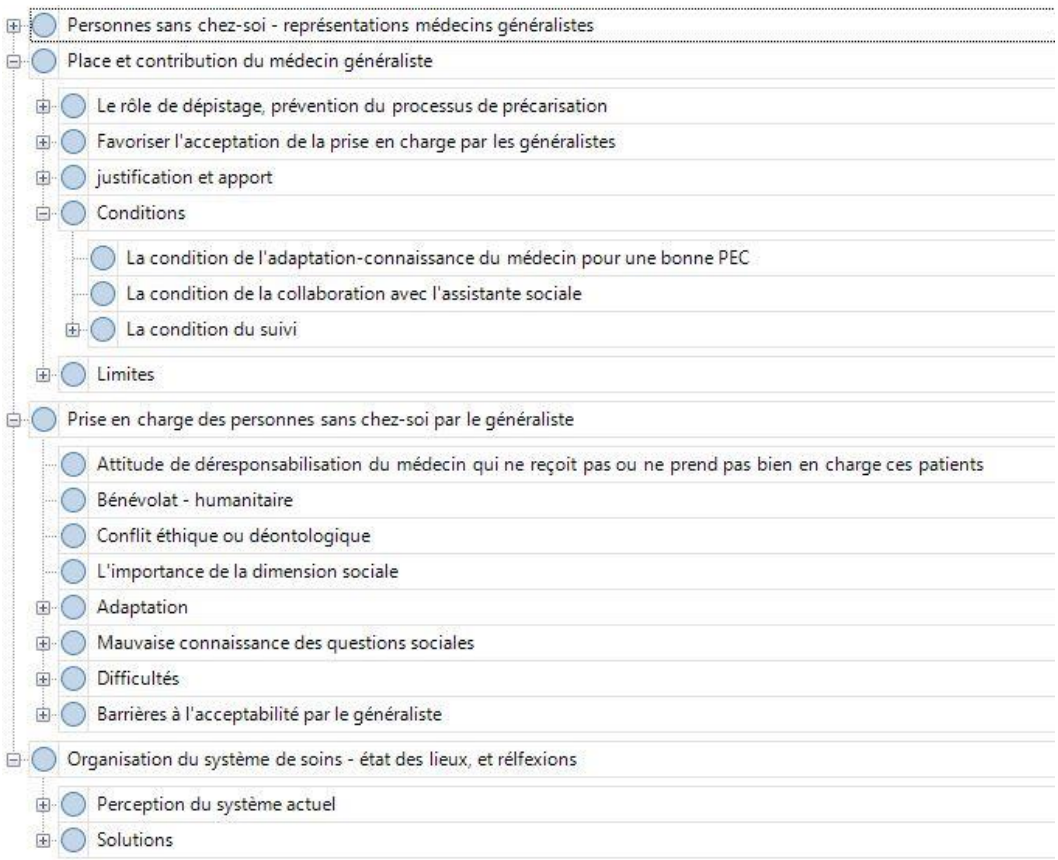


7) Phase 1, focus 5 - Solutions to improve the effectiveness and involvment of GPs (« involved GPs »)

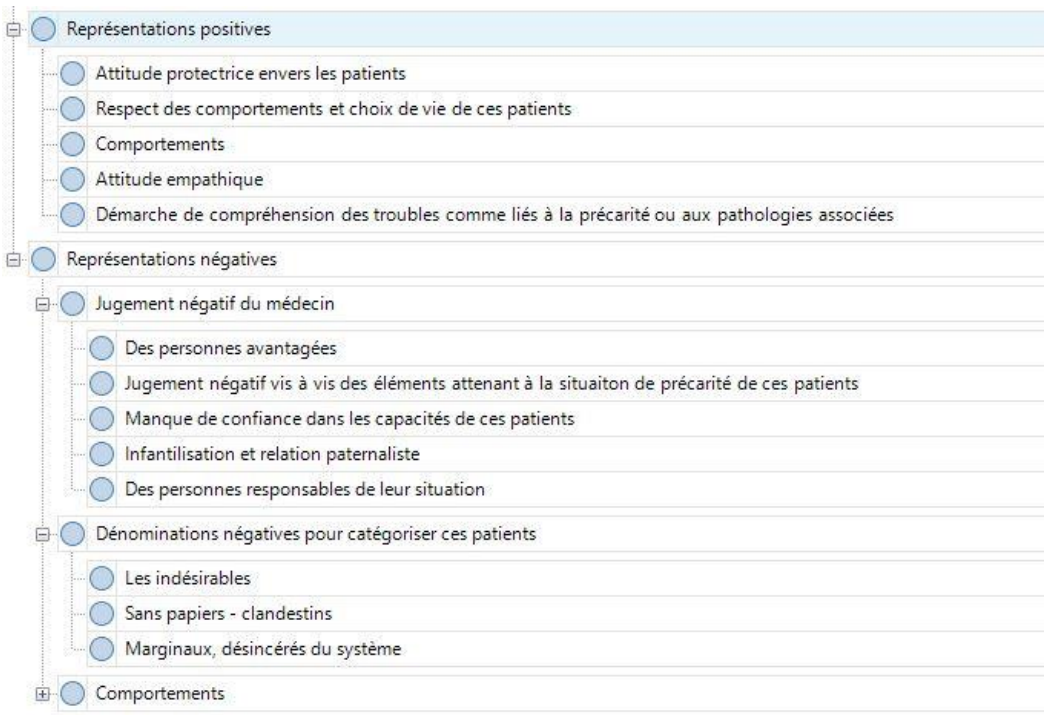


II. Phase 3 : interviews with « standard GPs »

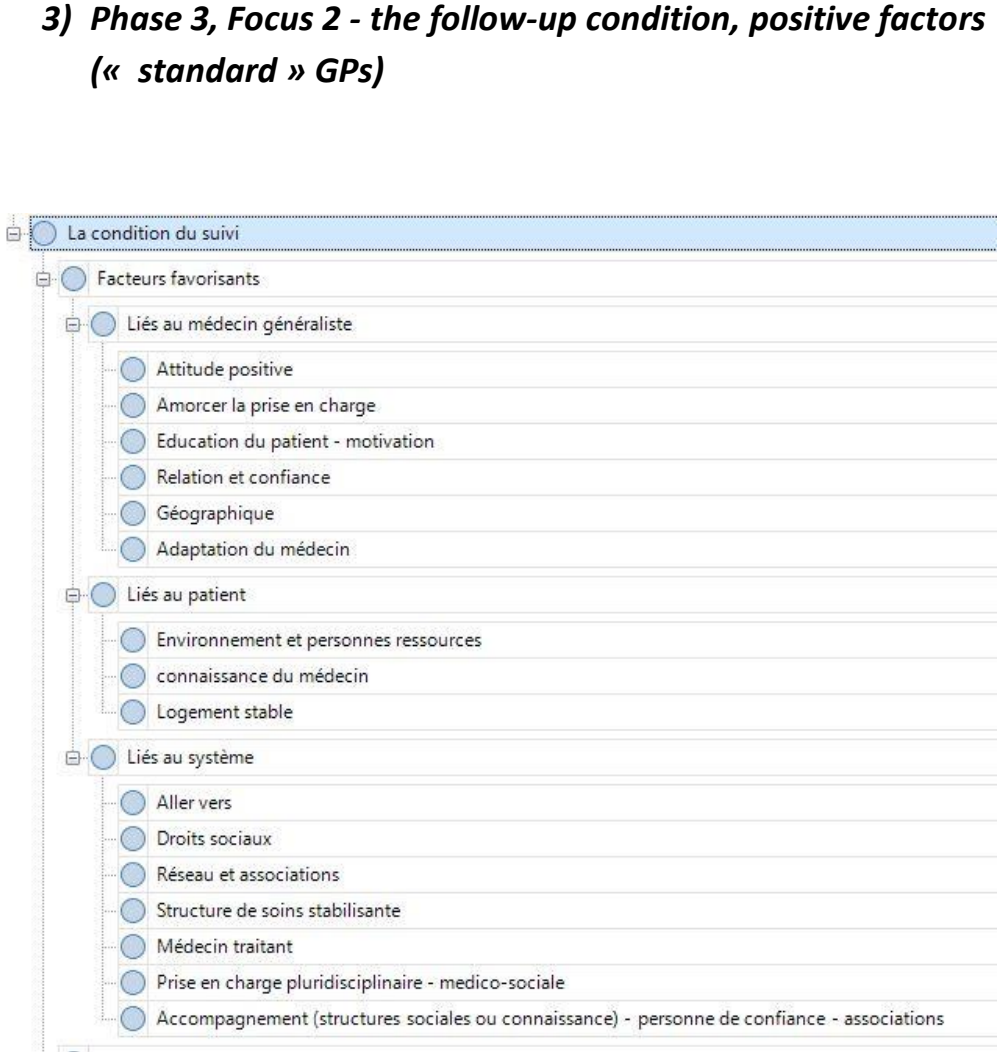
1) Phase 3, Standard GPs and HP - coding tree overview (« standard GPs »)



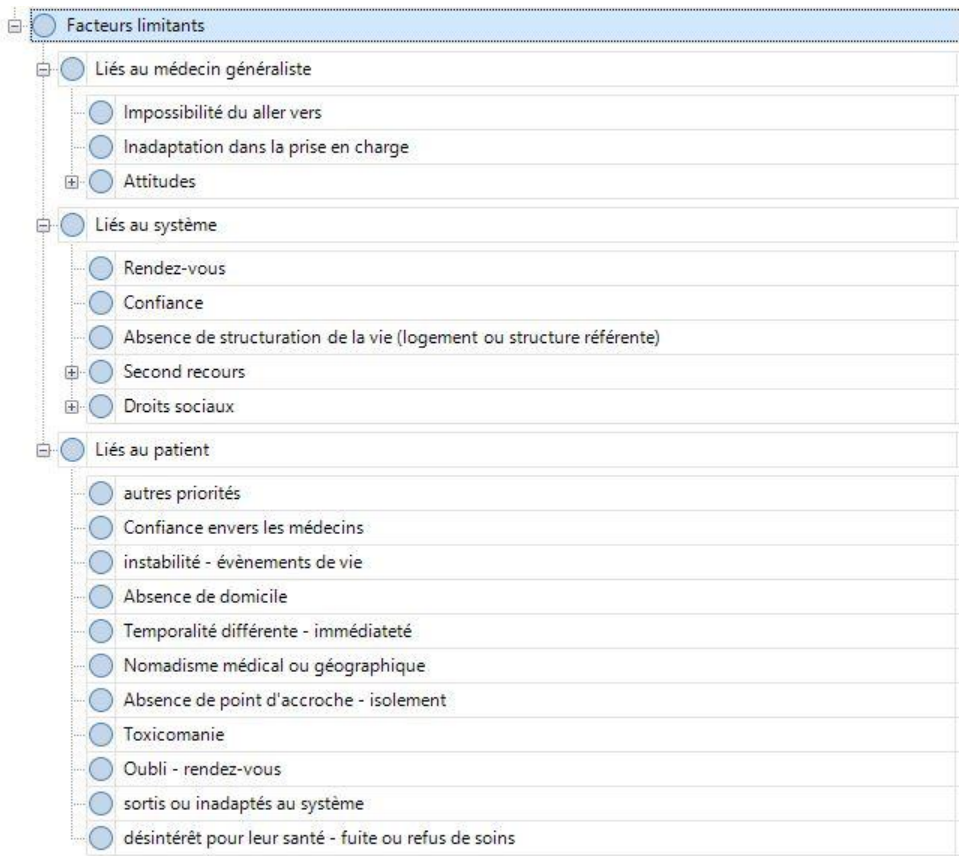
2) *Phase 3, focus 1 - positive and negative views of standard GPs about homeless people*



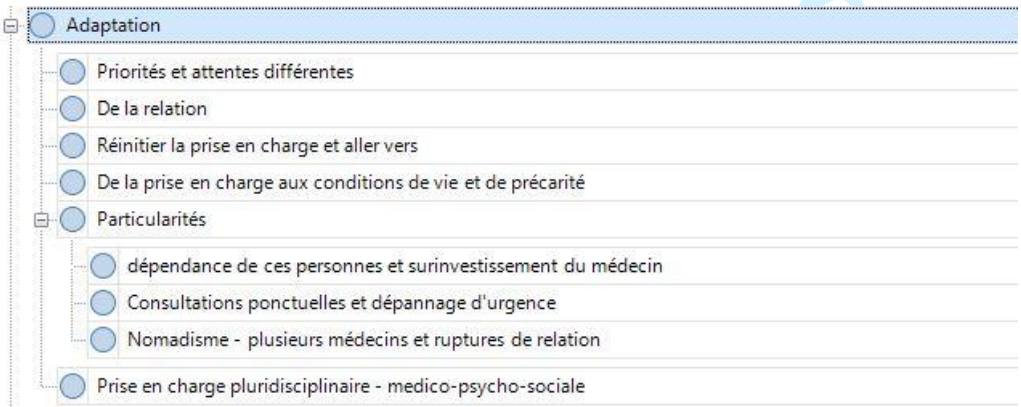
3) Phase 3, Focus 2 - the follow-up condition, positive factors (« standard » GPs)



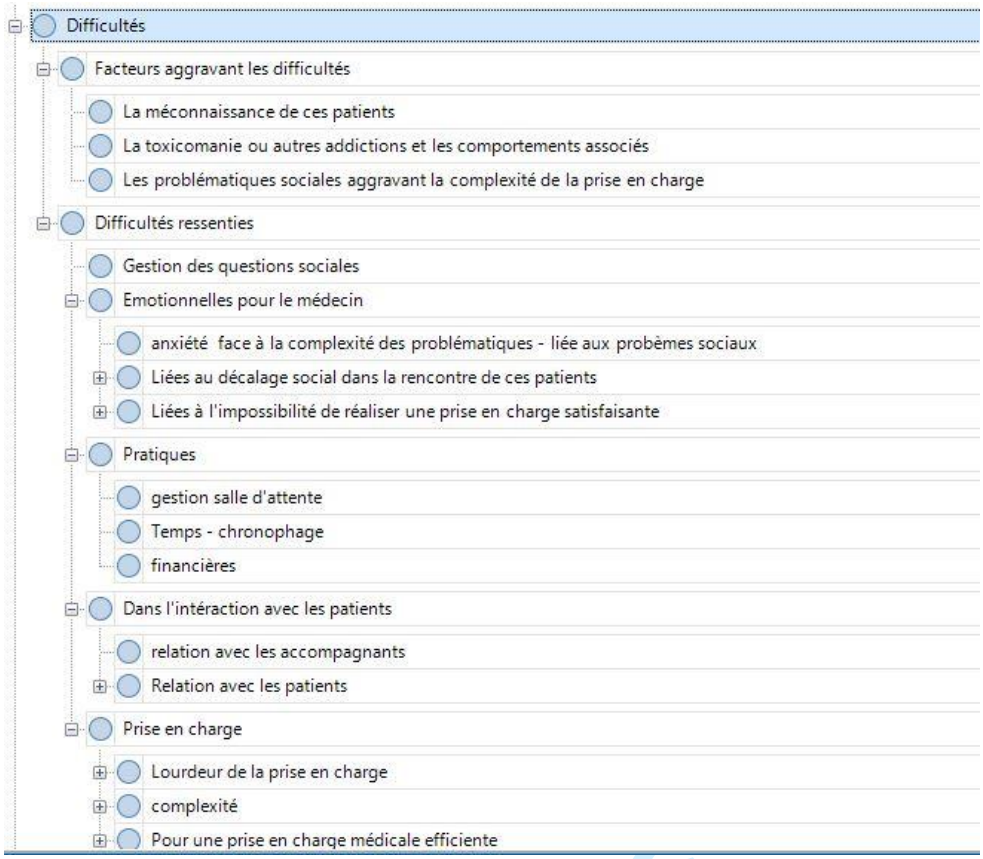
4) Phase 3, focus 3 - the follow-up condition, negative fators (« standard » GPs)



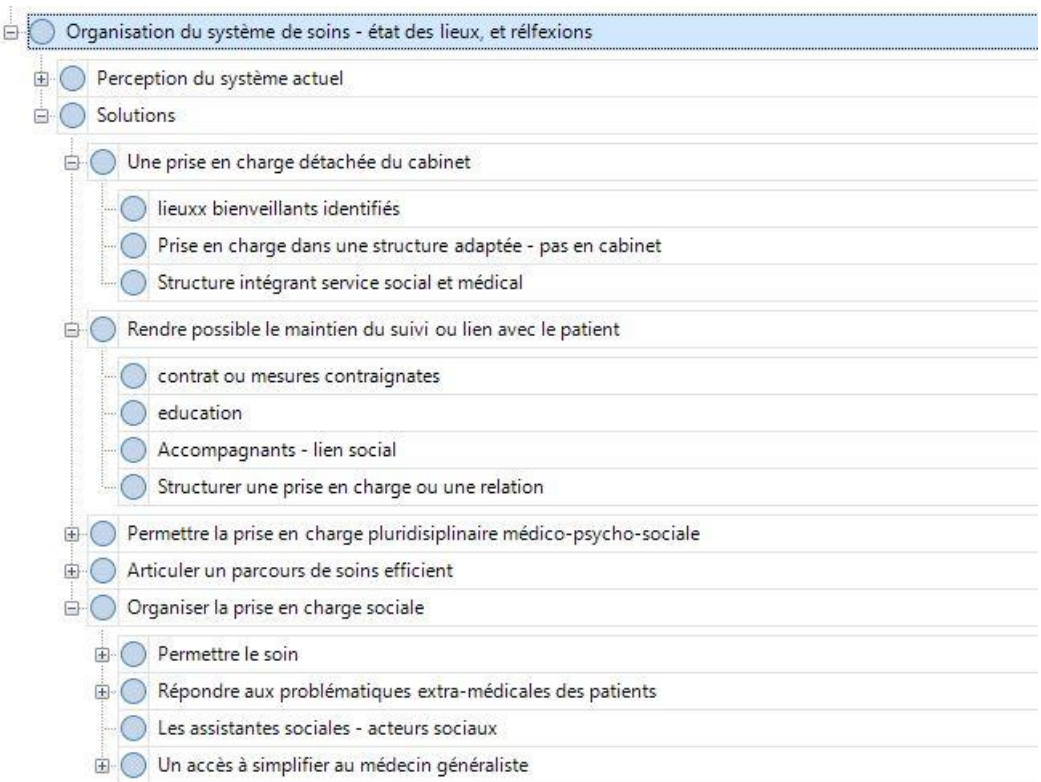
5) Phase 3, Focus 4 - How GPs have to adapt their practice (« standard » GPs)



6) Phase 3, Focus 5 - difficulties when GPs care for homeless people (« standard » GPs)



7) *Phase 3, Focus 6 - organizational solutions to improve involvment and effectivness of GPs (standard GPs)*



COREQ

Domain 1 : research team and reflexivity		
1- Interviewer/facilitator	Which author conducted the interview or focus group ?	JEGO Maeva : p6 (phase 1), p7 (phase 3)
2- Credentials	What were the researcher's credentials ?	JEGO Maeva was master thesis student, and resident in general practice for phase 1 (p6) / Doctoral student and resident in general practice for phase 3 (p7)
3- Occupation	What was their occupation at the time of the study ?	JEGO Maeva : In a research year to perform a master thesis for phase 1 (p6 and 20), resident in general practice and doctoral student for phase 3 (p7)
4- Gender	Was the researcher male or female ?	Female (p1)
5- Experience and training relationship with participants	What experience or training did the researcher have ?	Student in master thesis for phase 1 (p6), doctoral student for phase 3 (p7) Further information (not in the article) : JEGO Maeva received training about qualitative methods with FAYR GP (French Association of Young Researchers on General Practice) on September 2012, before the construction of the protocol of this study. She also had theorical training during the master thesis. It was her first practical experience in qualitative design. Dr Balique, Dr GRassineau and Pr Gentile Stéphanie already directed qualitative project, and had experience about qualitative methods.
6- Relationship established	Was a relationship established prior to study commencement ?	Phase 1 (p6) : « The first GPs were identified by working in specialized care centers for precarious or homeless people, 3 of them had already been identified to be particularly involved in homelessness by Dr Balique, who had established contact with them before the

		construction of this protocol." Phase 3 : GPs recruited from GPs who already responded the questionnaire. (p7)
7- Participant knowledge of the interviewer	What did the participants know about the researcher ?	The participants knew that JEGO Maeva for each phases about the activities of Dr JEGO. (p6 for phase 1, p7 for phase 3)
8- Interviewer characteristics	What characteristics were reported about the interviewer	Cursus / Research scolarship (p1, p6/7, p20)
Domain 2 : study design		
9- Methodological orientation and theory	What methodological orientation was stated to underpin the study ?	Content analysis (p2, 6 for phase 1 and 7 for phase 3)
10- Sampling	How were participant selected ?	Snowball for phase 1. (p6) Quota sampling for phase 3. (p7)
11- Method of approach	How were participants approached ?	By telephone to make the contact. Then the interview were conducted in face to face (p6 for phase 1, 7 for phase 3)
12- Sample size	How many participants were in the study ?	19 for phase 1 (page 8)/ 14 for phase 3 (page 14) (defined by data saturation) (p 6-7)
13- Non-participation setting	How many people refused to participate or dropped out ?	Phase 1 (page 8) : 5 GPs refused to participate : - Not concerned by homelessness (2) - Lack of time for interview (3) For 5 other GPs, We never obtained a first contact. Phase 3 (page 14) : GPs explained their refusal by lack of time for the interview. 1 GP delayed the interview but wasn't interviewed because data saturation had been reached
14- Setting of data collection	Where was the data collected ?	Mostly in workplace (office of GPs). Details mentionned for others. (page 8 for phase 1, 14 for phase 3)
15- Presence of non-participants	Was anyone else present besides the participants and researchers ?	No (indirectly mentionned p6-7)
16- Description of sample	What are the important	Phase 1, (page 8): We included

data collection	characteristics of the sample ?	19 “involved” GPs. The sample was diversified on age, genre, type of exercise and structure for the exercise. Most of them (13) had a salaried or mixed exercise. None of them declared receiving any patient with a high or very high social level. Phase 3 (page 14) : We included 14 GPs, who were diversified in sex, age, type of practice, number of doctors in the office, secretary, and having or not received a homeless patient in the past. We obtained data saturation on the thirteenth interview, confirmed by the fourteenth.
17- Interview guide	Were questions, prompts, guides provided by the authors ? Was it pilot tested ?	P6-8 (thematics, pilot test). Annex 1
18- Repeat interviews	Were repeat interviews carried out ?	No p6-7
19- Audio/visual recording	Did the research use audio or visual recording to collect the data ?	Audio recording p6-7
20- Field notes	Were field notes made during and/or after the interview or focus group ?	Yes p6-7
21- Duration	What was the duration of the interviews or focus group ?	Phase 1 : mean of 1 hour p8 Phase 3 : mean of 29 minutes p14
22- Data saturation	Was data saturation discussed ?	Yes p6-7 (methods), 8-14 (results)
23- Transcripts returned	Were transcripts returned to participants for comment and/or correction ?	No (due to protocol and confidential policy). But for phase 1, a meeting was organized with participants at the begining of the analyses, to have their feed back. P6-8
Domain 3 : analysis and findings		
24- Number of data coders	How many data coders coded the data ?	1 (JEGO Maeva), supervised by Dr Balique Hubert. P6 – 7
25- Description of coding tree	Did authors provide a description of the coding tree ?	Yes P9 – 15-annex 2

26- Derivation of themes	Were themes identified in advance or derived from the data ?	Derived from the data P9-14
27- Software	What software, if applicable, was used to manage the data ?	N-Vivo version 10 : p 6-7
28- Participant checking reporting	Did participants provide feedback on the findings	Yes, by : - A meeting organized during analyses of phase 1 - Feed back after reading master thesis and doctoral thesis, before the ending of the script. P6-7
29- Quotations presented	Were participants quotations presented to illustrate the themes / findings ? Was each quotation identified ?	Yes. Identification number has not been reported in the article, but can be if necessary. P10-11, 15
30- Data and findings consistent	Was there consistency between the data presented and the findings ?	(I hope, but it's submitted on your appreciation) P10 ; 15
31- Clarity of major themes	Were major themes clearly presented in the findings ?	(I hope, but it's submitted on your appreciation) P 9-10, 15-16
32- Clarity of minor themes	Is there a descrption of diverse cases or discussion of minor themes ?	Yes, but not on all the minor themes (because the article would be too long). P10-11, 15-16

STROBE Statement—checklist of items that should be included in reports of observational studies

	Item No	Recommendation
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract p2
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found p2
Introduction		
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported p4
Objectives	3	State specific objectives, including any prespecified hypotheses p5
Methods		
Study design	4	Present key elements of study design early in the paper p2,5,6
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection p 7
Participants	6	*Cross-sectional study*—Give the eligibility criteria, and the sources and methods of selection of participants p7
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable p7
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group p7
Bias	9	Describe any efforts to address potential sources of bias p7 / 17
Study size	10	Explain how the study size was arrived at p7 / 17
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why p7
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding p7
		(*b*) Describe any methods used to examine subgroups and interactions na
		(*c*) Explain how missing data were addressed p17
		Cross-sectional study—If applicable, describe analytical methods taking

account of sampling strategy p6-7

(*e*) Describe any sensitivity analyses p7/17

Continued on next page

Results		
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed p12+figure 2
		(b) Give reasons for non-participation at each stage figure 2
		(c) Consider use of a flow diagram figure 2
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders p12
		(b) Indicate number of participants with missing data for each variable of interest na
Outcome data	15*	
		Cross-sectional study—Report numbers of outcome events or summary measures na
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included p14
		(*b*) Report category boundaries when continuous variables were categorized na
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period non relevant
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses na
Discussion		
Key results	18	Summarise key results with reference to study objectives p16/17
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias p17
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence p17
Generalisability	21	Discuss the generalisability (external validity) of the study results p17
Other information		
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based p20

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.