Author's response to reviews

Title: Assessment of Primary Health Care Provide to the Elderly and Health Related Quality of Life: a Cross-sectional Study

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**Title:** Assessment of Primary Health Care Provide to the Elderly and Health Related Quality of Life: a Cross-sectional Study

Dear Dr. Pafitis,

We appreciate very much the comments of the reviewers. The criticisms were fully incorporated in the final version, which was improved.

Thank you for the attention to our manuscript.

Best wishes,

Sandra Fuchs, MD, PhD
Reviewer: Joan Gene Badia

We thank Dr. Badia for her suggestions, which were fully incorporated in the manuscript and contributed to improve the article. In the following paragraphs we presented an answer and the changes in the manuscript, point by point, according to the criticisms of the reviewer.

Reviewer’s report:

Paper is aimed to show through an elderly population survey that newly launched units in Brazil under the Family Health Strategy show higher primary health care attributes than the already existing Basic Health Units irrespective of the chronic diseases treated or the social and demographic and socioeconomic characteristics of the population. The study is not ambitious, but it is methodologically correct and adequately proved the hypothesis.

Major Compulsory

1. Paper lack a clear description of the two models of primary health care, as well as a brief description of the ratio of the number of inhabitants per family doctor and other main service variables in both models of care. It must be said that older model was health programme orientated and the new one is aimed to be person centred. There is a lot of bibliography of this issue missing in the paper.

Answer:

We accepted the criticism of the reviewer and expanded the manuscript describing with more details the two models of primary health care available to the Brazilian population.

Changes in the manuscript:

Introduction – second paragraph (new text in blue)

In Brazil, the National Health System (SUS, Unified Health System) is based on universal free access to healthcare to the whole population, with decentralization provided at all levels – from prevention to high complexity level, shared by government, federal, state and municipal. The SUS includes the model of foresight system, which provides care in basic health units (BHUs) for spontaneous demand or patients referred by other services. The team is composed commonly by a non-specialist physician (clinicians, pediatricians and gynecologists), nurses, and other health workers, offered in the BHUs, which meets. The target is to increase the level of health, reducing and controlling the burden of diseases in the population through health assistance and using programs aiming at women, children, adults, the elderly, sexually transmitted diseases, etc. In the BHUs, the team is not focused in integrating health care [4]. This form of organization and dispensation of services - based on risk groups or injuries - remains as an approach.

The third paragraph

The second model of PHC, based in the Family Health Strategy (FHS), provides participative and comprehensive care, and a centralized coordination system [4]. FHS started in the poorest areas, with no PHC coverage, and since then has been gradually implemented replacing the traditional care. This model aims to insert the individual in the system, offering a primary care-person centered, with priority to prevention and health promotion, and secondarily to curative medicine. However, the coverage is universal, geographically circumscribed and with referral to other levels of care when necessary [5]. FHS includes health care implemented by nuclear teams, including a family physician, a nurse, four community health workers, and other assistants. Each team is to be responsible for 1,000 families, up to 4500 individuals, [6] and the family doctors live in the communities where they work [7].
2. The literature review is poor. According to the results, it seems that Family Health Strategy units are in more socially deprived areas than the Basic Health Units. It is known that the primary care units results vary according to the population characteristics (Social characteristics, literacy, demography variables, etc.). This topic is a major cause of byass and it is not well discussed in the paper.

Answer:

We accept the criticism of the reviewer and expanded the literature review in the introduction (see above). The Family Health Strategy units are located in more socially deprived areas than the Basic Health Units. Please, see the comments below. We agree with the reviewer that results vary according to the population characteristics and that is a major cause of biases. So we expanded the discussion section.

In Brazil, the FHS started in the poorest areas, with no coverage, and gradually have been expanded toward reach a full coverage. There was an asymmetric distribution of FHS units among regions in the country. For instance, in 2003, the Northeast region had 49.8% coverage, the highest in the country, followed by about a third in other regions. In a town of Northeast region, 27% of residents in areas served by the FHS were among the poorest 20 percent of the population, compared with 36% in a city from the south. However, coverage was higher for the first city: more than 55% of the poorest residents lived in the areas where the FHS was active, in comparison to only 19% from the southern city. Since the start, the socioeconomic deprived areas had priority to receive a FHS unit, and differences among areas are still present. So, the analyses were conducted taking into account age, sex, and years at school as confounding factors.

Changes in the manuscript:

Discussion – first paragraph (new text in blue)

This study showed that elderly individuals had higher PHC attributes attainment, or PHC scores, in units with FHS than in BHUs. Since there are socioeconomic differences among individuals from both types of units [6], the analyses were conducted taking into account age, sex, and years at school, as confounding factors. In addition, regardless of the health problem, the PHC scores were directly associated with the mental component of quality of life and inversely with the physical component. The results suggest that the degree PHC score was not associated with a particular type of health problem.

Fifth paragraph

In this study, socioeconomic status was determined by formal education, and the analyses took into consideration, but residual confounding is still possible. In fact, the socioeconomic status was positively associated with quality of life in some but not in all countries [30]. In Canada, for example, patients have universal access to health care and socioeconomic status does not prevent seeing a doctor. In addition, a consultation with a specialist in Canada is determined by need and not by household income, the opposite of the United States [31].

Seventh paragraph

However, there are other dimensions to be assessed in the PHC. For instance, patient-physician relationship and teaching activities were positively associated with quality of care in a study conducted in the Catalan Primary Health Care - with universal coverage used by 75% of the population, which is quite similar to the Brazilian national health system. It was found that accessibility and patient-physician relationship were higher in rural areas, among teams involved in the care of elderly, and for less privileged populations [36]. This study did not investigate the doctor-patient relationship and adoption of evidence-based practices. Even so, it is likely that family physicians often use more practice-based evidence, since there are residency programs offered more.
frequently at FHS. Additionally, although many tools can be used to evaluate the attributes of PHC, from the patient's perspective, they do not cover all aspects. Recent article that reviewed validated instruments used to evaluate the attributes of PHC, detected that the core attributes were included in PCATool and in all others [37].

3. Authors must explain why the physical component is worse in the Family Health Strategy units, and provide some international bibliography to support their views.

**Answer:**

We did not do in-depth interviews to investigate the mechanisms of these associations. However, we can suggest an interpretation to the results, based on literature. Quality of life decreases with aging, mainly due to reduction in physical rather than mental functioning [Hoi le V, Chuc NT, Lindholm L. Health-related quality of life, and its determinants, among older people in rural Vietnam. BMC Public Health. 2010;10:549]. Patients who use the FHS are more likely of living alone or with a spouse, refer chronic pain, have central obesity, and higher number of comorbidities. These conditions were inversely associated to the use of health services, which are provided by the FHS through greater access, availability of services, monitoring, and comprehensive care, and for participate in family-oriented and community activities. Moreover, these conditions can reduce health and, in turn, the physical component of quality of life [Xavier FMF, Ferraz MPT, Marc N, Escosteguy NU, Moriguchi EH. Elderly people's definition of quality of life. Rev Bras Psiquiatr. 2003;25(1):31-9; Alexandre TS, Cordeiro RC, Ramos LR. Factors associated to quality of life in active elderly. Rev Saude Publica. 2009 Aug;43(4):613-21].

**Changes in the manuscript:**

Third paragraph of the discussion

Lowest score for the physical component of quality of life FHS should be interpreted with caution. It is anticipated more pronounced reduction of physical functioning than mental [26]. However, the mean age was similar among elderly patients of both types of units, which have differences in other characteristics. Patients who used the FHS were more likely to live alone or with a spouse, refer chronic pain, have central obesity, and greater number of co-morbidities. These conditions were directly associated to the use of health services [24,25], which are provided by the FHS through greater access, availability of services, monitoring, and comprehensive care, and for participate in family-oriented and community activities. Moreover, these conditions can reduce health and, in turn, the physical component of quality of life [27,28]. In Australia, the elderly showed similar results to the present study, lower PCS-12 vs. higher MCS-12, which highlighted the role of psychological distress and chronic diseases [29].

**Minor essential revision**

In method provide reference if the SF-12 is already validated in Brazil

**Answer:**

A reference was included.

**Discretionary revision**

Not only in China the low quality of life lead to a higher demand o health services. This is an universal issue

**Answer:**
We agree with the reviewer. Therefore, we included another reference from Germany.

**Change in the manuscript:**

Studies conducted in China [24] and Germany [25] have shown that low quality of life markedly increased the use of health services, but this relationship was characterized for PHC without comparison with traditional Chinese medicine or other type of healthcare.
Reviewer’s report

Reviewer: Maria Luiza Garcia Rosa

We thank Dr. Rosa for her comments, which helped us to improve the manuscript. Some of the criticisms were similar to those provided by the other reviewer. Therefore we repeated here the answers. In the following paragraphs we presented the answers and the changes in the manuscript, pointing out the insertion of the new text (in blue).

Reviewer’s report:

Quality of written English needs some language corrections before being published.

Answer:

We used this opportunity to review the English language of the article and improve as much as possible for a non-native speaker.

Statistical review: The manuscript does not need to be seen by a statistician.

1. Is the question posed by the authors well defined? Not enough

Answer:

We expanded the details of the Brazilian Health System and the background. We incorporated three new paragraphs (second, third and fifth).

Changes in the manuscript:

Introduction - second paragraph

In Brazil, the National Health System (SUS, Unified Health System) is based on universal free access to healthcare to the whole population, with decentralization provided at all levels – from prevention to high complexity level, shared by government, federal, state and municipal. The SUS includes the model of foresight system, which provides care in basic health units (BHU) for spontaneous demand or patients referred by other services. The team is composed commonly by a non-specialist physician (clinicians, pediatricians and gynecologists), nurses, and other health workers, offered in the BHUs, which meets the target is to increase the level of health, reducing and controlling the burden of diseases in the population through health assistance and using programs aiming at women, children, adults, the elderly, sexually transmitted diseases, etc. In the BHUs, the team is not focused in integrating health care [4]. This form of organization and dispensation of services - based on risk groups or injuries - remains as an approach.

Third paragraph

The second model of PHC, based in the Family Health Strategy (FHS), provides participative and comprehensive care, and a centralized coordination system [4]. FHS started in the poorest areas, with no PHC coverage, and since then has been gradually implemented replacing the traditional care. This model aims to insert the individual in the system, offering a primary care-person centered, with priority to prevention and health promotion, and secondarily to curative medicine. However, the coverage is universal, geographically circumscribed and with referral to other levels of care when necessary [5]. FHS includes
health care implemented by nuclear teams, including a family physician, a nurse, four community health workers, and other assistants. Each team is to be responsible for 1,000 families, up to 4500 individuals, and the family doctors live in the communities where they work.

Fifth paragraph

PHC should be prepared to handle highly prevalent conditions, to provide preventive and curative care, and to maximize the health and well-being of the elderly population. Thus, quantifying the PHC scores can not only check whether goals are being achieved as it is possible to develop and implement alternatives to existing policies, to ensure better health and quality of life. The aims of this study were to evaluate whether elderly patients who consulted in units with FHS had higher PHC attributes attainment than those who consulted in the traditional care model; if morbidities - hypertension, diabetes mellitus, mental disorders, chronic pain – were reported as major health problems; if body mass index of obesity and central obesity was independently associated with major PHC attributes attainment; and whether the PHC score was associated with quality of life in elderly individuals.

2. Are the methods appropriate and well described? Not enough

Answer:

We expanded the description of methods and most of the new text is in blue.

Changes in the manuscript:

Study design and Participants

This cross-sectional study included … The units were visited by the supervisor in order to obtain consent to perform the data collection. The fieldwork was conducted by random selection of units and days to conduct the interviews. Research assistants assessed eligibility of patients who were in the unit that day, for consultation or to attend a group activity, and for those who were visited at home by the staff of PHC. The Ethics Committee of the Conceição Hospital of Porto Alegre, accredited by the Office of Human Research Protections the Institutional Review Board approved the project (registry: GHC 090 090/09) and all participants signed a consent form.

Data collection

Trained research assistants conducted interviews using standardized questionnaires including demographic variables (age and sex), socioeconomic (education, in years, work status, marital status, family members living in the household), reported major health problems (hypertension, diabetes mellitus, mental disorders, chronic pain), and measured morbidity (general obesity and abdominal obesity). Anthropometric measurements were performed in duplicate and the average was used for analysis. Waist circumference (cm) was measured in the midpoint between the anterior superior iliac spine and iliac crest and the inferior costal rib using flexible inelastic tape; weight (kg) was measured while the subject stood balanced on both feet, approximately 20 cm apart, and with both arms hanging freely, wearing minimal clothing, with Techline scale (model BAL-180-CI, with 100 g precision), and height (m) was measured with Sanny portable stadiometer; weight and height were used to calculate body mass index (kg/m²). The SF-12, version 2 [23], and PCATool [13,14], both validated for the Portuguese, were used, respectively, to investigate quality of life and PHC orientation.
3. Does the manuscript adhere to the relevant standards for reporting and data deposition? Yes

4. Are the discussion and conclusions well balanced and adequately supported by the data? No, the discussion is insufficient.

**Answer:**
We agree with the reviewer. Please, see below the expanded discussion.

**Changes in the manuscript:**

**First paragraph**

This study showed that elderly individuals had higher PHC attributes attainment, or PHC scores, in units with FHS than in BHUs. Since there are socioeconomic differences among individuals from both types of units [6], the analyses were conducted taking into account age, sex, and years at school, as confounding factors. In addition, regardless of the health problem, the PHC scores were directly associated with the mental component of quality of life and inversely with the physical component. The results suggest that the degree PHC score was not associated with a particular type of health problem.

**Second paragraph**

Evaluation of the PHC attributes attainment using PCATool [17,18,21] had already been characterized, but for older individuals this result is a novelty. The elevated scores observed for PHC attributes attainment among FHS could be anticipated since this model of care was planned to fulfill these attributes while BHUs aimed to a different target. Even so, is reassuring to know that the FHS is reaching its purpose. The lower prevalence of scores below 6.6 on PHC units with FHS, regardless of the health problem, demonstrated the relevance of the model of care among the elderly, independently of the condition. Studies conducted in China [24] or Germany [25] have shown that low quality of life markedly increased the use of health services, but this relationship was characterized for PHC without comparison with traditional Chinese medicine or other type of healthcare.

**Third paragraph**

Lowest score for the physical component of quality of life FHS should be interpreted with caution. It is anticipated more pronounced reduction of physical functioning than mental [26]. However, the mean age was similar among elderly patients of both types of units, which have differences in other characteristics. Patients who used the FHS were more likely to live alone or with a spouse, refer chronic pain, have central obesity, and greater number of co-morbidities. These conditions were directly associated to the use of health services [24,25], which are provided by the FHS through greater access, availability of services, monitoring, and comprehensive care, and for participate in family-oriented and community activities. Moreover, these conditions can reduce health and, in turn, the physical component of quality of life [27,28]. In Australia, the elderly showed similar results to the present study, lower PCS-12 vs. higher MCS-12, which highlighted the role of psychological distress and chronic diseases [29].

**Fourth paragraph**

Some considerations should be made for PHC scores for hypertension and cardiovascular disease that had opposite directions. Hypertension is a common condition usually seeing by family doctors while cardiovascular diseases are more often handled by cardiologists, who are at the referral level aggregated to the BHUs.

**Fifth paragraph**
In this study, socioeconomic status was determined by formal education, and the analyses took into consideration, but residual confounding is still possible. In fact, the socioeconomic status was positively associated with quality of life in some but not in all countries [30]. In Canada, for example, patients have universal access to health care and socioeconomic status does not prevent seeing a doctor. In addition, a consultation with a specialist in Canada is determined by need and not by household income, the opposite of the United States [31].

Seventh paragraph

However, there are other dimensions to be assessed in the PHC. For instance, patient-physician relationship and teaching activities were positively associated with quality of care in a study conducted in the Catalan Primary Health Care - with universal coverage used by 75% of the population, which is quite similar to the Brazilian national health system. It was found that accessibility and patient-physician relationship were higher in rural areas, among teams involved in the care of elderly, and for less privileged populations [36]. This study did not investigate the doctor-patient relationship and adoption of evidence-based practices. Even so, it is likely that family physicians often use more practice-based evidence, since there are residency programs offered more frequently at FHS. Additionally, although many tools can be used to evaluate the attributes of PHC, from the patient's perspective, they do not cover all aspects. Recent article that reviewed validated instruments used to evaluate the attributes of PHC, detected that the core attributes were included in PCATool and in all others [37].

6. Are limitations of the work clearly stated? Yes
7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished? Yes
8. Do the title and abstract accurately convey what has been found? Yes
9. Is the writing acceptable? Yes

Table 2 [mean (95%CI) or N(%)] => [mean±SD] and N(%) are not presented!!!!

Answer:
It was corrected.

Minor Essential Revisions

The title of table 3 is not clear. It must be changed! Suggestion: Prevalence ratio of low score in PHC, by type of care model and chronic condition…

In the text:
(The association between PHC scores, were lower in the BHU units than those with FHS: incorrect=>The prevalence of low scores were higher in BHU model… independently of the major problem (and other confounding factors for patients treated in both models incorrect => no confounding were controlled for in table 3) (Table 3).
Answer:
My apologies for such mistake. It was changed.

In all chronic conditions, the scores were higher among patients treated in units with FHS: commentary: Table 3 presents the prevalence of high/low PHC score by model in presence/absence of a health condition. So is preferable to say that the prevalence of high scores were higher in FHS model…

Answer:
It was accepted and changed.

Table 4 Model => Model
Answer: it was corrected.

The title of table 5 is not clear. The coefficient for chronic condition is not presented, it appears just as confounding variable. Suggestion: Adjusted linear association between PHC and Physical or Mental component of quality of life score.

Answer:
It was accepted and changed.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.