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The Biopsychosocial Vulnerability in Primary Care

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Abstract: The need for early screening of the biopsychosocial vulnerability within primary care is clear in the literature, but there is disagreement on the definition and type of score to be used. Health is influenced by determining not only biological, but also psychological and social. The aims of the study are research and evaluation tools to determine the biopsychosocial vulnerability and the creation of a flow-chart for the establishment of health and socio-personalized care programs, but based on scientific evidence. In our study we have built an original scale of assessment for the general medicine, which could simultaneously analyze the Bio-Psycho-Social aspect of patients. A group of GPs (general practitioners) have tested this tool on a group of complex patients. The results of the study show that a high score on our scale of assessment is not correlated with the age of a patient (R = 0.454); instead there is a straight correlation between the high score and the number of GPs and patient contacts (R = 0.790) and a border-line significant correlation (R = 0.590) between high scores and hospital admissions and resources utilization. In conclusion, with our assessment scale we built a general medicine instrument, simple, integrated with primary care setting and tools, fast in use. In the research and validation phase we showed how this scale would be able to identify patients in need of more attention where there is a necessity to go from a Guideline and EBM-Based approach to a Personalized approach.

Key words: Chronic disease, comorbidity, primary health care, family practice, outcome and process assessment, screening, patient-centered.

1. Introduction

Chronic diseases are becoming more common and health systems are today facing the multimorbidity this demanding and high costs have put them in front, in terms of resources scarcity and output efficiency [1, 2-8]; also psychological and social factors may affect access, use, and self-care.

For the (GPs) general practitioners the complexity of the patient is the most common conditions, which for the GPs are presented by the biopsychosocial vulnerability [2].

The biopsychosocial vulnerability is particularly important in generalists environments, such as primary care, where GPs act as the first point of contact for people with a wide range of conditions and patients often over the age or affected by several coexisting conditions [9, 10].

The progressive aging of the population in industrialized countries and the social changes of the last century brought a set of new health problems and management difficulties; this phenomenon increasingly requires the management of chronic diseases and implies the progressive loss of autonomy of people who can not have a stable social support. It seems clear that to define the vulnerability of a person we can not simply base our judgment on the age alone, therefore it arises the need for a simple assessment tool, rapid and complete, for the identification of the most vulnerable people on which to plan the most efficient use of resources [11-13] (Appendix A).

2. Method

2.1 Defining Biopsychosocial Vulnerability

The identified tools were analysed according to the following criteria: execution simplicity, objectivity, practicality with territorial medical instruments, feasibility based on execution time, completeness, ability to anticipate future loss of autonomy.

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In our study, we have built an original scale of assessment for the general medicine, which could simultaneously analyze the Bio-Psycho-Social aspect of patients:

Biologic:

(1) Number of chronic conditions [14, 15]

(*Extended Quality and Outcome Framework (QOF)*)

Score	Chronic conditions
1	Atrial fibrillation Depression Coronary heart disease Diabetes
2	Chronic obstructive airways disease Epilepsy in therapy Mental health problem Chronic kidney disease - Stage 4 Stroke (TIA= 0) Heart failure
3	Cancer Dementia Moderate or severe liver disease
5	Chronic kidney disease - Stage 5
6	Cancer metastases

(1) Number of chronically medications [13, 16]

Is the number of medications taken chronically ≥ 8?

YES: ☐ NO: ☐

(2) Reduction of body weight

The patient has involuntarily lost ≥ 5 kg in the last 6 months?

YES: ☐ NO: ☐

(3) Movement capacity/risk of falling/autonomy [17, 18]

(*Get up and go test*)

Description	This test measures the time taken for a person to rise from a chair, walk 3 m at normal pace with their usual assistive device, turn, return to the chair, and sit down.
Criterion	A time of ≥ 12 seconds indicates increased risk of falling.
Time to undertake test	1-2 minutes
Equipment	Chair and stopwatch or minute hand on watch

Psychologic:

(4) Cognitive condition [19, 20]

(*General practice cognitive test (GPCog)*

For the Patient or for the Caregiver (Appendix B)

(5) Mood

Are you unsatisfied with your life as a whole?

Are you unsatisfied with your health?

Do you suffer from loneliness?

YES: ☐ NO: ☐

Social:

(6) Social and/or family support

Is there a reliable Caregiver?

YES: ☐ NO: ☐

N°	Evaluation	Cut-off	Score
1	Extended QOF Number of chronical medications	≥ 4 ≥ 8	1 1
2	Reduction of body weight ≥ 5 kg in the last 6 months	Yes	1
3	Get up and Go Test	> 12''	2
4	GPCog Test	≤ 5/9 Patient ≥ 3/6 Caregiver	1 1
5	Mood	Yes ≥ 1/3	1
6	Social and/or family support presence	NO	2

Final assessment table

Patient's final score:

We have obtained an assessment tool that allows producing in a short time (maximum 9 minutes) an accurate score for each patient seen by their GPs, who will then be able to identify among his patients those who need the most attention and resources.

Its field of action is in fact the largest and must take into account all the aspects inherent in life and human well being, established in the region and in the society in which the patient lives; the GP has the task to consider in his approach a set of variables which can fully represent the complexity of each patient.

In this way we achieved a practical and real-life assessment, to identify patients in occasions where there is a necessity to go from a Guideline and EBM-Based approach to a Personalized approach [21].

2.2 Simple

To test the instrument, 6 GPs have randomly selected 79 complex patients and they have valued them using the proposed assessment scale. For each patient we have valued the score and the time spent to obtain it.

Then the patients were followed for six mounths recording:

- GPs ambulatory and home visits
- specialist visits
- instrumental and laboratory examinations
- admissions to hospital and/or in the emergency department
- deaths

2.3 Analysis

For each one of the 79 patients it has been possible to obtain the requested data and the required time for the assessment has been always maintained under 9 minutes. No patient, once informed, has denied the agreement to being part of the study. In most cases patients have shown willingness and joyful coohoperation during the assesment. The study, carried out with an opportunistic metodology, never interfered with the clinical work of the GPs.

We have been able to assess the existence of a linear correlation between the variables considered and the score obtained by each patient by calculating the Pearson correlation coefficient, R. This indicator shows the degree of positive or negative correlation between two variables, showing values ranging from -1 to +1. Every correlation to be considered significative is required to show a value of R under -0.6 or over +0.6.

3. Results

The results of the study show that a high score on our scale of assessment, is not correlated with the age of a patient (R = 0.454): This is what empirical observation predicted at the beginning of our studies, as complexity in general medicine is determined not only by the age of patients, but also by all the other parameters which compose the Bio-Psycho-Social universe of people [11] (Appendix A) taken in care by GPs (Fig. 1).

Secondly, high scores on our scale of assessment have shown a strong correlation (R = 0.790) with the amount of working effort which these patients bring to their GP (Fig. 2), measured by the number of visits

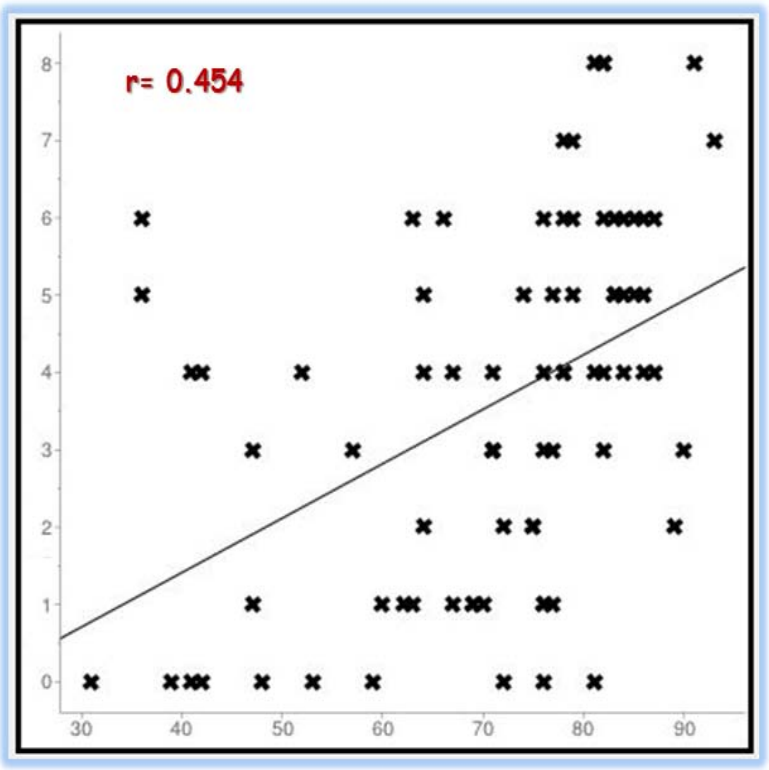

Fig. 1 High scores are not correlated with the patients age.

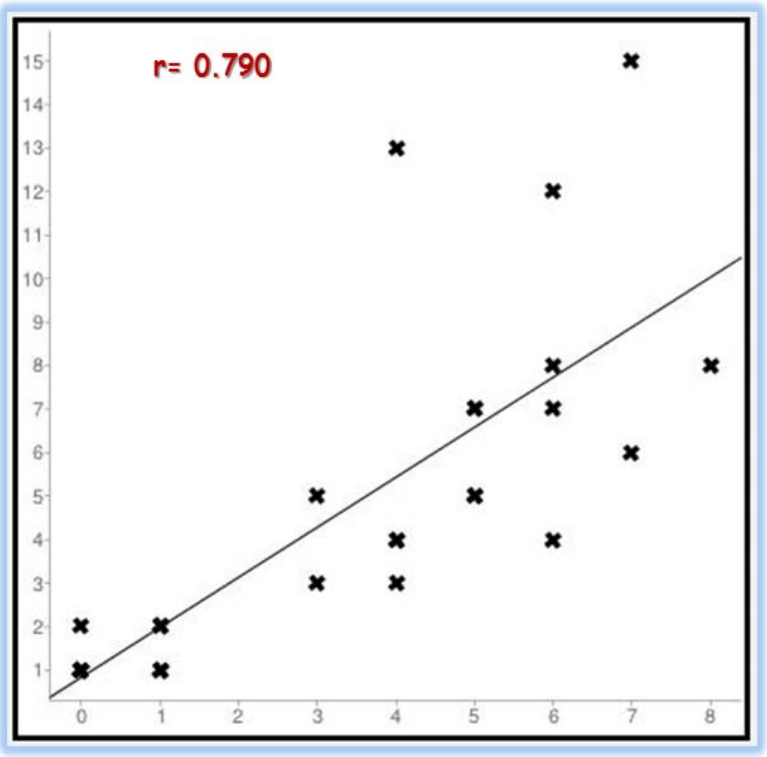

Fig. 2 There is a straight correlation between the high score and the number of GPs and patient contacts (in ambulatory and at home).

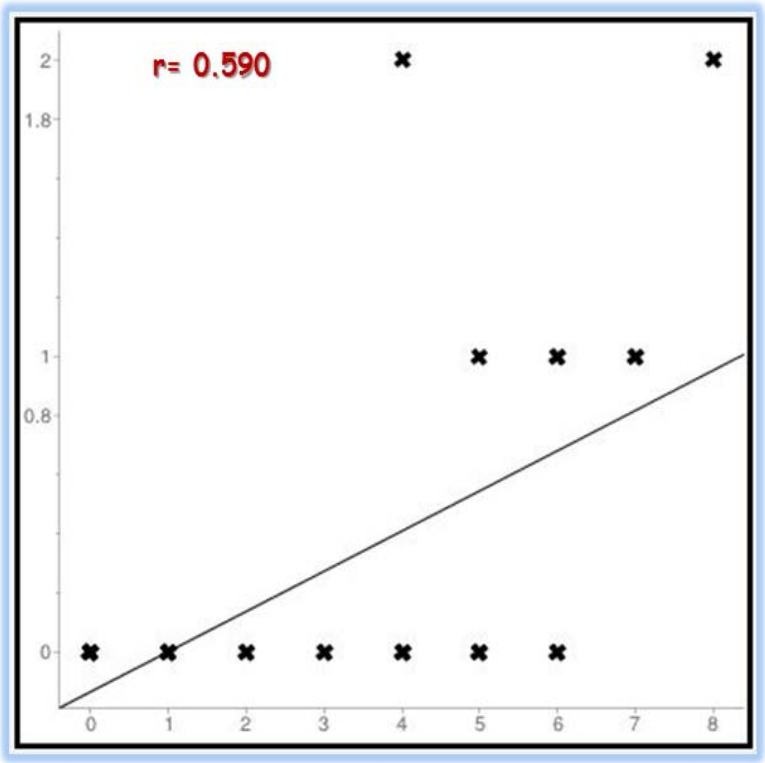

Fig. 3 There is a correlation between the high score and the number of hospital admissions and the number of specialized visits and exams (laboratory and instrument).

required (both in ambulatory and at home).

The last obtained result is the observation of a border-line significant correlation (R = 0.590) between high scores and hospital admissions and resources utilization (Fig. 3), expressed by the number of specialized visits and exams (laboratory or instrument).

Death analysis was not feasible, given the dimension of the statistical sample and the brief time of observation.

4. Discussion

Health is influenced by determinants not only biological, but also psychological and social.

With our assessment scale we built a general medicine instrument, simple, integrated with primary care setting and tools, fast in use. In the research and validation phase we showed how this scale would be able to identify patients in need of more attention and which will consume more Health Care resources.

Patients identified in the process will require proactive strategies of initiative medicine by the GP, in order to allow a correct management of the case, so that an improvement of autonomy and health would be possible, with the decrease of excessive use of Health Care economical resources.

Through our scale we can now identify 3 categories of patients, based on the obtained score.

- Non-complex Patient = 0-2 (No addictional action or observation required)
- Complex Patient = 3-5 (Required addictional observation)
- Highly Complex Patient = 6-9 (Required addictional action)

Scores in the scale can furthermore guide in the identification of the best strategies to support the enlightened Bio-Psycho-Social vulnerability, giving the GP a possibility to act from time to time with a focus on the Biological, Psychological or Social side.

In the future we cosider appropriate a more deep anlysis of the potentialities of our scale of assessment, through a second experimentation phase on a wider patient statistical sample, during a longer period of time.

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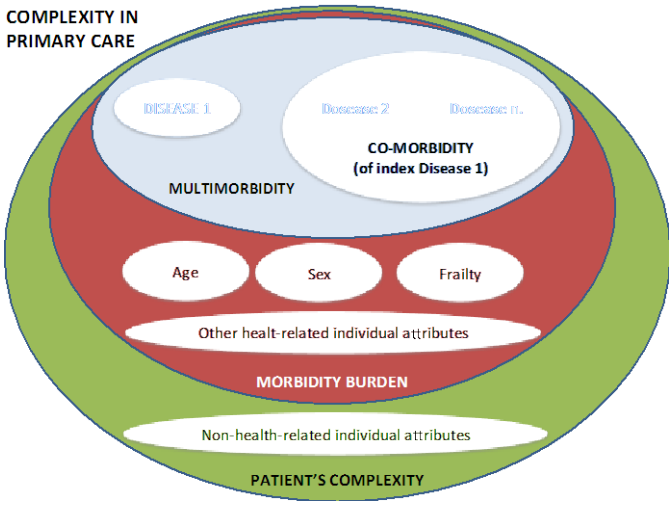
Appendix A (adapted from Ref. [11])



Appendix B

GPCOG Patient Examination

Unless specified, each question should only be asked once.

Name and address for subsequent recall test

1. *"I am going to give you a name and address. After I have said it, I want you to repeat it. Remember this name and address because I am going to ask you to tell it to me again in a few minutes: John Brown, 42 West Street, Kensington."* (Allow a maximum of 4 attempts but do not score yet)

	Correct	Incorrect
Time Orientation		
2. *What is the date?* (exact only)	☐	☐
Clock Drawing (visuospatial functioning) - use page with printed circle		
3. *Please mark in all the numbers to indicate the hours of a clock* (correct spacing required)	☐	☐
4. *Please mark in hands to show 10 minutes past eleven o'clock* (11:10)	☐	☐
Information		
5. *Can you tell me something that happened in the news recently? (*recently = in the last week)	☐	☐
Recall		
6. *What was the name and address I asked you to remember?*		
John	☐	☐
Brown	☐	☐
42	☐	☐
West (St)	☐	☐
Kensington	☐	☐

GPCOG Informant Interview

Ask the informant: "*Compared to a few years ago,*

		Yes	No	Don't Know	N/A
I.	*Does the patient have more trouble remembering things that have happened recently?*	☐	☐	☐	
II.	*Does he or she have more trouble recalling conversations a few days later?*	☐	☐	☐	
III.	*When speaking, does the patient have more difficulty in finding the right word or tend to use the wrong words more often?*	☐	☐	☐	
IV.	*Is the patient less able to manage money and financial affairs (e.g., paying bills, budgeting)?*	☐	☐	☐	☐
V.	*Is the patient less able to manage his or her medication independently?*	☐	☐	☐	☐
VI.	*Does the patient need more assistance with transport (either private or public)?*	☐	☐	☐	☐