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Methodological dilemmas concerning measuring of mental and social health: a narrative review

Dawid Dobosz*[1 A-E]

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Dictionary:

Conceptualisation – a basic idea or rule that explains or controls how something happens or works.

Non-apparatus test – that motoric test (exercise endurance test) of the required reliability (accurate and reliable), which use does not require even the simplest instruments [90].

Innovative agonology (INNOAGON) – is an applied science dedicated to promotion, prevention, and therapy related to all dimensions of health and the optimization of activities that increase the ability to survive (from micro to macro scales) [83, 85].

Muscle strength – essential and basic physical capacity in combat sports by which the body moving status is modified [91].

[1] EPIONE Sp. z o.o., Katowice, Poland
*** Corresponding author:** Dawid Dobosz, Master Degree in Physiotherapy;
e-mail: doboszdawid@interia.eu

Abstract:

Background and Study Aim: It is commonly accepted that health has three dimensions: somatic, mental and social. There is probably no example of health deterioration manifesting in only one of them. Although one of the essential elements of effective restoring, sustaining, and enhancing health is its proper measurement, the most expanded field of health measurement relates to the somatic dimension. The aim of the study is knowledge about methodological dilemmas concerning measuring mental and social health.

Material and Methods: The author made three assumptions concerning the process of literature searching. Consequently, a variety of key terms related to methodology, psychology and sociology were combined with the word 'dilemma' (or its synonyms) and Boolean operators to create diverse search strings. Additionally, the author utilised a scholarly publication discovery tool supported by artificial intelligence. Thirty-four publications met the inclusion criteria for the review.

Results: The study revealed that the main dilemmas in mental health measurement revolve around its conceptualization, the statistical aspects of measurement, and the identification of clinically useful mental health indices. In contrast, the main challenge in social health measurement is the lack of a universally accepted theory. However, more knowledge is available regarding the conceptualization and measurement of directly or indirectly related constructs.

Conclusions: Methodological dilemmas concerning mental and social health measurement mainly revolve around a semantic layer of validation (construct and content validity) of indices of these health dimensions. Some of these dilemmas would not occur if scientists focused more on using precise language or providing high-quality reasoning. The practical consequence of delivering clear and precise scientific knowledge about mental and social health measurement should be creating simple tools useful to assess these health dimensions, which would be easy for ordinary people to use.

Keywords: biopsychosocial model of health, complementary approach, conceptualisation, innovative agonology, measurement criterion

1. Introduction

According to the WHO (World Health Organization), health has three dimensions: somatic, mental, and social [1]. It is difficult to introduce any clear example of health deterioration which manifests only in one of them. On the contrary, different types of relationships occur: bidirectional influence between mental and somatic health (affective disorders; physical disability) [2]; the negative influence of somatic health on mental health (low back pain; mood) [3]; the positive influence of social health on mental health (social relationships; general mental health and well-being) [4]; it empowers tendency to foster a biopsychosocial model of health [5].

One of the most essential elements of effective restoring, sustaining, and enhancing health is its proper measurement. The term 'measure'; as a noun is defined as 'a basis or standard of comparison'. If it is used as a verb, it means 'to estimate or appraise by a criterion' [6]. These two meanings complement each other since some measurement criterion directs any efficient measuring process. Physicians would be unable to ascertain hypertension in patients if the optimal value of blood pressure was not settled.

The most expanded field of health measurement relates to its somatic dimension. Assuming the five-level model [7], the achieved degree of methodological and technological development allows us to describe somatic health manifestations at 4 out of 5 levels of body organisation: molecular [8], cellular [9], tissue system [10], and whole body [11]. It results in a large number of indicators. It is exemplified by a model of reference man devised by the International Commission on Radiological Protection (ICRP). The report of ICRP from 1974 has 497 pages and incorporates such circumstantial indicators of body structure as the weight of the adult tongue, total blood content of the stomach or thickness of the epidermis [12]. Tables comprising percentile values of field tests used to evaluate children's motor abilities, such as muscular strength [13], anaerobic [14], and aerobic [15] capacity, are another example. Such an extended set of indices (and established relations between them) allow for intuitive comprehension of what somatic health is, although it doesn't have a precise definition. This, formulated by The European Patients' Academy on Therapeutic Innovation (EUPATI), may be considered unsatisfactory [16].

An additional advantage of somatic health assessment methods is that they are founded on a well-grounded methodology of basic sciences like physics, biology, or chemistry. Their primary advantage is exact and fixed language. For example, The International Systems of Units, in its final form, was established in 1960 [17]. Although the definition of some particular units has been modified because of physics development [18, 19], it has no practical consequences for the measurement methodology in such sciences as biomechanics or kinesiology.

Exploring mental and social health is much more complicated since they may be observed only indirectly, and theories concerning them are more speculative. However, considering the mental and social dimensions of individuals' health seems necessary for setting effective strategies for improving patients' compliance to therapy [20] and overall psychological adjustment to a chronic illness [21]. Thus, these issues have peculiar importance in the education of specialists focused mainly on restoring or enhancing somatic health (nurses, physicians, physiotherapists, PE teachers).

The aim of the study is knowledge about methodological dilemmas concerning measuring mental and social health.

2. Materials and Methods

The author made three assumptions. First, since the research aim content constitutes the combination of three branches of science (methodology, psychology, sociology), which differ in terms of the language, so there are no strict criteria that allow for deciding which of them is the most appropriate for identifying the relevant methodological dilemmas related to mental and social health measurement. Second, the review has partly conceptual character, which means that general statements are not based on a generalisation of information included in the scientific literature but reflect some interesting universal problems present in mental and social health measurement for which cited articles are only exemplifications. Third, the term "dilemma" used in the title inherently includes a subjective (creative) aspect that can't be described precisely. Hence, the author had to rely partly on intuitive reasoning while selecting the papers to review.

If these assumptions are considered, it is justified not to apply strictly homogeneous criteria characteristic for systematic literature search method (using fixed search strings). Instead, the author decided to select various terms related to methodology ('definition', 'classification', 'measurement'), psychology ('mental health', 'mental disorder', 'mental disease'), sociology ('social health') and use them in combination with word 'dilemma' or its synonyms and Boolean operators to create diverse search strings. Additionally, to facilitate work, Research Rabbit®, a scholarly publication discovery tool supported by artificial intelligence, was utilised [22]. Thirty-four publications met the inclusion criteria for the review.

3. Results

Methodological dilemmas concerning mental health measurement mainly concern the defining of the positive (positive mental health) and negative (mental disorder) dimension of mental health [23-27]. Two critical issues related to defining mental disorder are the false positives problem [28-32] and the utility of the concept of psychiatric comorbidity [33]. The last one also constitutes one of the four main issues discussed (together with aetiology, categories vs dimensions, and thresholds) regarding classifying various mental disorders [34] – some of them also concern methods of diagnosing [35, 36].

The second set of dilemmas concerns the statistical aspect of mental health measurement. It includes interpreting the relation between mathematical (formal latent variable) and empirical (operational latent variable) descriptions of psychological constructs [37], validating psychological constructs [38], operationalising general hypotheses in psychology [39], quantifying psychological attributes [40], and classifying mental disorders according to quantitative criteria [41].

More practical dilemmas are associated with the selection of indices of mental health, which would be the most useful in clinical settings. The constant problem of mental health measurement is the lack of objective indices of psychiatric diseases [42]. Although there is significant technological advance [43], research findings are not always generalizable [44], and proposed biomarkers don't meet clinical utility criteria [45]. Moreover, standard questionnaires applied in mental health assessment differ in accuracy. It is especially apparent in conclusions of meta-analysis and reviews in which different tools used to detect one clinical phenomenon like bipolar spectrum

disorders [46], depression [47] or their elements such as negative symptoms in schizophrenia [48] are compared. Besides, research reveals that improving diagnostic accuracy requires changing how some questionnaires are used [49]. Eventually, the level of scientific evidence is not always a deciding criterion, and clinicians are advised to select an instrument that fits their practice the most [50].

The main factor making social health measurement difficult is the lack of one commonly accepted theory of social health phenomenon. Its different models [51-53] imply various indicators. It's worth noting that social health theorists don't mention any manifestations of its deficits analogical to somatic and mental disorders. Only a few scales explicitly measure social health [54-56]. More knowledge about conceptualisation and measurement is available regarding constructs considered directly (such as social support, social participation, etc.) or indirectly (like social capital) related to social health [57-59].

4. Discussion

Some methodological dilemmas concerning the measurement of mental and social health (even somatic health!) will never be definitely disentangled. The permanent debate on the conceptualisation of mental disorder is a good example. Even if scientists reached a consensus on its general definition, it would be very abstractive and still allow for various (equivalent in terms of validity) operationalisations. It stems from objective (the complex nature of mental health phenomena) and subjective (the scientist's methodological preferences). Both are also important in the context of the nosology of mental disorders. There were (and still are) advocates for various opposing approaches to classifying them (descriptive vs aetiological, symptoms vs course of illness, idiographic vs nomothetic, categorical vs dimensional, etc.). Eventually, it is argued that the value of a given taxonomy depends on its practical usefulness in clinical, research or administrative contexts, and probably no taxonomy has universal applicability [60]. Despite such controversies [61, 62] related to the Diagnostic and Statistical Manual of Mental Disorders DSM [63] and the International Statistical Classification of Diseases and Related Health Problems ICD [64], both remain clinically helpful [65, 66]. It's quite understandable if the role of psychiatrists' intuition in the diagnostic process is considered [67]. An assessment of social health seems even more challenging.

The most noticeable is a low level of conceptualisation of social health. Besides, the authors of cited papers didn't mention its most noticeable negative manifestation, such as aggression [68]. There is a need to combine the most relevant elements of current approaches. Russel's definition of social health seems accurate and would be a good starting point for theoretical reasoning [69].

There are many indices of somatic health which can be measured with the use of simple methods: heart rate (pulse palpation) [70], blood pressure (the auscultatory method) [71], body composition (BMI calculation) [72], muscle strength (one-repetition maximum test) [73], flexibility (non-apparatus and quasi apparatus flexibility tests) [74]. Even If people only regularly self-monitored (the majority of tests allow for that) values of these indices, they would already be able to make optimal decisions regarding daily health behaviours, which include the structure of physical activity (intensity, type, etc.) or dietary habits (number of sweets or alcohol intake etc.). People can, obviously only to some extent, even deal with more serious problems concerning

their somatic health, like back pain [75]. It's worth noting that people using these methods have limited knowledge about somatic health. More precisely, it is simplified.

Experts of the WHO enumerated simplification as one of the methodological trends in screening for disease: 'Although it remains to be decided how precise methods should be for screening purposes, it is certainly not necessary to aspire to the same degree of accuracy as in hospital laboratory work or research' [76]. In other words, methods of health measurement dedicated to use in non-clinical settings should be more sensitive than specific. The question arises whether creating such simple methods of self-monitoring that would enhance self-management is possible regarding mental and social health.

Self-monitoring is a well-known element of cognitive behavioural therapy. It encompasses recording by the patient such information as food and drink intake, binge or compensatory behaviours, time, meal type and associated feelings at each meal [77]; the timing of 17 activities that constitute an individual's social rhythm (bipolar disorder) [78] etc. Since this detailed information is context-dependent and needs additional interpretation, it may not be helpful for general mental health assessment in ordinary people. In turn, disorder-specific questionnaires are instead intended to confirm the diagnosis of a person who has already developed symptoms indicating a type of mental disorder (sometimes already severe). Besides, few questionnaires measure ordinary people's general mental and social health. Two well-known are the single-item measure of self-rated mental health [79] and the 12-item General Health Questionnaire [80]. Another one, although recently emerged, is already positively validated [81, 82].

The quite paradoxical tendency occurs in broadly understood health care at present. On the one hand, there is increasing comprehension that any health deterioration encompasses all its dimensions. On the other hand, already accumulated health knowledge is dispersed among an increasing number of specialists (dieticians, psychiatrists, physicians, physiotherapists, personal trainers, etc.). It is a negative tendency since ordinary people interested in a healthy lifestyle associate it mainly with taking care of somatic health (dieting, regular physical activity), so it is very likely that they would not consider visiting a psychiatrist or psychologist as an essential element of their prophylactic health assessment.

A complementary approach to health promotion should be reflected in methods and means used to enhance health. This approach is the basic method (research and education) of the new applied science – innovative agonology [83-86]. The easiest way of applying this paradigm is incorporating the regular mental and social health assessments of people participating in organised forms of physical activity (PE classes, fitness classes, group rehabilitation, etc.). Such a recommendation is the most sensible in the case of forms of physical activity that induce psychophysical changes belonging to more than one health dimension. Exactly, a selected combat sports and systems or hand-to-hand combat exercises have such potential [87], which may be fully utilised only if teaching them meets high ethical and pedagogical standards [88]. Unfortunately, many mental barriers (personal and institutional) limit the widespread reduction of the susceptibility to body injuries during a fall phenomenon, among others, by teaching safe falls modelled on certain combat sports [89].

5. Conclusions

In statistical terms, most methodological dilemmas regarding health measurement constitute a set of issues related to the validity of various health indices (in practice: results of the tests). Validation concerns either their semantic layer, namely the accurateness of the description of phenomena (construct validity and content validity) or the syntactic layer, that is, the network and type of relations between the new index and other indices treated as a frame of reference (criterion validity). Methodological dilemmas concerning mental and social health measurement mainly revolve around a semantic layer of validation of indices of these health dimensions. Some of these dilemmas would not occur if scientists focused more on using precise language or providing high-quality reasoning. The practical consequence of delivering clear and precise scientific knowledge about mental and social health measurement should be creating simple tools useful to assess these health dimensions, which would be easy for ordinary people to use.

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Authors:

Dobosz Dawid: https://orcid.org/ 0000-0002-9919-6677

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