Selection of sustainability indicators for health services in challenging environments: Balancing scientific approach with political engagement

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ABSTRACT

Sustainability evaluation has become a key component of international health. However, evaluators have faced a number of challenges linked to the lack of consensus on the meaning of the concept of “sustainability”. This paper aims to describe a methodology, the Sustainability Analysis Process, based on several conceptual frameworks and tested in five different countries in the physical rehabilitation sector. The methodology consists of five successive steps: (i) overview of the context; (ii) system boundary; (iii) consensus vision of sustainability, and derivation of stakeholder perspectives; (iv) selection of sustainability indicators and characterization and analysis of local system sustainability; and (v) verification and modification. The paper also discusses the potential of the evaluator and researcher in the process: the methodology aims to help evaluators objectively measure the level of sustainability of a health system with the challenge of dealing with a subjective notion, the concept of sustainability, and a diversity of actors. The Sustainability Analysis Process also aims to capture the dynamics of systems by repeating the process on a regular basis. The methodology highlights the need for evaluators build consensus amongst stakeholders on a common vision of the future of a health system.

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1. Introduction

Sustainability is a key component of health systems planning in developing countries (Leach, Scoones, & Stirling, 2007; UNCF, 1988; WBW, 1993; WHO, 1987, 1988). Since the mid-1990s, governments and development agencies have sought to adopt sustainability indicators as a concrete tool to measure progress and guide decisions (UNCED, 1992, paragraph 40.6). Early on it became clear that selection and use of indicators for sustainable health systems presented several challenges. In particular, the selection and utilization of sustainability indicators is a trade-off between a reductionist approach and a more systemic view of sustainability (Bell & Morse, 2008; Sarriot, Ricca, Ryan, Basnet, & Arscott-Mills, 2009). Reductionism describes the wholeness of a system as the sum of its parts. The objective of reductionism is to explain reality using scientific methods and be able to explain reality through measurable and predictable data (Bell & Morse, 2008, 1999). Reductionism has greatly contributed to scientific knowledge but is questioned by the scientific community when reductionism is applied to real life situations where interactions between phenomena and human beings constitute the central subject of the study. System thinking tends to approach systems as a whole and analyze their dynamics (Bossert, 2012; de Savigny & Adam, 2009). Capturing the complexity of sustainability of health systems requires to combine both approaches: (i) using available evidence; and (ii) understanding the interrelationships between systems through a more subjective process engaging stakeholders (Chambers, 1994a, 1994b). These challenges are magnified in low-income settings where empirical evidence may be lacking, project-focused approaches to development abound, and where sustainability is truly a relative term given the variety of local socio-political and economic contexts (Atkinson, 2002; Bloom, 2011).

In this paper we present the Sustainability Analysis Methodology (SAP) designed to allow conceptualizing and measuring sustainability of health systems in low-income countries and fragile states. Specifically, the SAP combines a scientific approach with public and professionals’ engagement to define sustainability indicators. We tested the methodology in Cambodia, Liberia, Nepal, Sierra Leone and Somalia, focusing on the health-related rehabilitation sector. The methodology is not specific to the rehabilitation sector, however, and could be applied to other sub-sectors of the health system.

2. The Sustainability Analysis Process methodology design

The Sustainability Analysis Process (SAP) presented here is an adaptation of two existing methodologies combining a business
sector five-step approach with a conceptual framework for sustainability from the development arena.

The five-step approach is inspired by the Process Analysis Method, a business model developed in industry to provide a “formalistic and transparent approach” to generating sustainability indicators (Chee Tahir & Darton, 2006). Such an approach allows for comparability of results between “operations”, or systems, while allowing for data relevant to the specific contexts of each operation (Chee Tahir & Darton, 2006). The Process Analysis Method endorses a sustainability framework that is ill suited for the health sector in fragile states and so the Child Survival Sustainability Assessment (CSSA) framework (Sarriot, Winch, Ryan, Bowie, et al., 2004) was applied to our methodology.

The Child Survival Sustainability Assessment (CSSA) uses a conceptual framework for sustainability elaborated by the Child Survival Technical Group and the Sustained Health Outcomes (SHOUT) (Sarriot, Winch, Ryan, Bowie, et al., 2004; Sarriot, Winch, Ryan, Edison, et al., 2004). The framework was developed for international projects and has been successfully applied in a number of developing countries (Sarriot et al., 2009). The sustainability framework uses systems thinking instead of restricting the view to programs or projects. It is based on the assumption that sustainability is a multidimensional concept that encompasses six different components: (i) health outcomes; (ii) health services delivery, access and quality in terms of inputs, processes and outputs; (iii) organizational capacity; (iv) organizational viability; (v) community capacity; and (vi) enabling social, economic and policy environment.

The SAP, thus, combines the Process Analysis Method five-step approach with the CSSA conceptual framework for sustainability. The five steps include: (i) overview of the context; (ii) system boundaries; (iii) consensus vision of sustainability; (iv) selection of sustainability indicators and analysis of system sustainability; and (v) verification and modification. Sustainability indicators are defined based on context-specific multi-stakeholder consensus (Bell & Morse, 2008; Brown, 1998; Gruen et al., 2008).

3. Implementation of the methodology

The Sustainability Analysis Process (SAP) was carried out in each of the five countries by two researchers between 2009 and 2011. The participants to the process were identified by the researchers in collaboration with key informants in the country. Participants were key stakeholders involved in the public rehabilitation sector, including delegates from the Ministry of Health and/or Ministry of Social Affairs, regional health authorities, selected rehabilitation professional staff (physical therapists and orthopedic technicians), rehabilitation center managers, representatives of disabled people’s organizations and representatives of international donors and non-governmental organizations involved locally in the sector. Participants were invited to a 3-day sustainability workshop. The number of participants per workshop varied between 25 and 35. Presentations and discussions were conducted in the local language and dialects. Translation and sign language interpretation was provided for the duration of the workshop. The workshop agenda in the five test sites followed the five-step logic of the SAP and did not vary or evolve through the test sites. Specific content and tools for each step are described below.

3.1. Step I: overview of the context

This opening step is designed to foster a common understanding of the organization, stakeholders and processes within the rehabilitation sector. Typical questions asked by the facilitator were the following: “How is the sector organized?”, “What are the main achievements of the programmes?”, “Who are the main stakeholders and what are their roles?”. Participants themselves presented evidence from the sector using reports and data, which provided material for discussion.

3.2. Step II: system boundaries

The second step aims to define the local system and system boundaries, a prerequisite for developing sustainability indicators. In this step, a local system for the rehabilitation sector was defined as “a network of people and institutions whose coordinated actions bring about sustainable positive outcomes in the population [with rehabilitation needs]” (Yourkavitch, Ryan, & Sarriot, 2004, p. 22). System boundaries are broadly governed by spatial and temporal scales (Bell & Morse, 2008, 1999). Space can be perceived by individuals as anything from a small village or district to the whole world. It is crucial, then, to define clearly the boundaries of the system under study (Izac & Swift, 1994; Jansen, Stoorvogel, & Schipper, 1995). The temporal scale corresponds to the time span considered necessary for the system process in full.

3.3. Step III: consensus vision of sustainability

Step III aims to develop a common vision of sustainability among participants building on context and system boundaries as understood by the group. The approach is first to establish a sustainability reference, the level under which the system is NOT sustainable (Bossel, 1999). Specifically, participants were divided into small groups to discuss components of a non-sustainable system for every dimension of the CSSA framework. Following comprehensive discussion and debate on non-sustainability, lines of consensus were presented in plenary for full group discussion.

Table 1 illustrates responses from the sustainability workshop organized in Somaliland in 2011 whereby participants defined what is for them a non-sustainable rehabilitation system.

This consensus of non-sustainability was then translated into a vision of sustainable rehabilitation system by rephrasing the negative sentences into positive statements. For example, a statement such as “the rehabilitation sector is not sustainable when the delivery time of orthopedic devices is longer than standard delivery time” was transformed into a statement such as, “a rehabilitation sector is sustainable when delivery time of orthopedic devices respects standard delivery time”.

Table 1

<table>
<thead>
<tr>
<th>A vision of non sustainability of rehabilitation services in Somaliland February 2011.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The rehabilitation service delivery is not sustainable when .</td>
</tr>
<tr>
<td>Service provision</td>
</tr>
<tr>
<td>When coverage of rehabilitation services does not reach every level of the system – rural areas, urban, districts, villages</td>
</tr>
<tr>
<td>When the orthopedic technicians do not produce 6–8 devices minimum per month or the physiotherapists do not consult 10–15 patients per day</td>
</tr>
<tr>
<td>Delivery time is longer than standard delivery time</td>
</tr>
<tr>
<td>Technical quality does not respect national quality standards</td>
</tr>
<tr>
<td>The orthopedic devices cause pain to the user</td>
</tr>
<tr>
<td>The rehabilitation center does not have the minimum standard equipment and infrastructures to deliver services</td>
</tr>
<tr>
<td>A rehabilitation center does not have a minimum of 1 physiotherapist and one orthopedic technician</td>
</tr>
<tr>
<td>Less there are than 2 physiotherapist assistants and 2 orthopedic technician assistants in each region of the country</td>
</tr>
</tbody>
</table>

Source: Karl Blanchet.
3.4. Step IV: selection of sustainability indicators and analysis of system sustainability

Step IV aims to generate a set of sustainability indicators that are objective, comprehensive and relevant to the local context. Given the agreed-upon system boundaries as well as the consensus vision of sustainability, participants develop indicators that will allow them to measure the level of achievement in the various dimensions of sustainability (Table 2).

The choice of these indicators may reflect a conservative outlook, based on limited resources available to track or measure them. Alternatively, some indicators might mirror international policies and guidelines, which could be considered inappropriate or unrealistic in the local context. This situation requires participants to think both realistically and beyond current resources to come up with a consensus list of sustainability indicators for the rehabilitation sector.

Finally, participants are asked to benchmark their actual level of every indicator based on data available. In several instances no data existed at the time of the workshop. In such cases, key informants provided estimates to be verified later. Participants also realized that oftentimes data collection mechanisms did not exist. As such, the workshop served as an opportunity for identifying gaps in research and launching processes for monitoring and data collection.

3.5. Identification of the sustainability reference and use of radar diagrams

After selecting sustainability indicators for the existing system, participants need to define their sustainability reference, or the level under which their system is considered as unsustainable (Bossel, 1999). The sustainability reference is elaborated for every indicator selected in the six components of the sustainability framework (Table 3).

In this study, radar diagrams were used to visually illustrate each indicator (Fig. 1). Each indicator is represented by one arm and its value ranked from the center of the star to the end of the axis. The rehabilitation system is not sustainable if any of the values is plotted inside the unit circle. The unit circle, therefore, represents the sustainability reference.

3.6. Characterization and analysis of health system sustainability

The final task consists of analyzing the six graphs, using both comparisons between graphs as well as on-depth analysis of each graph to explore the composite indicators. On the basis of this discussion, workshop participants elaborate an action plan aimed to address the main weaknesses and reinforce the system’s strengths.

3.7. Step V: verification and modification

Sustainability indicators are measured during the workshop even if they are estimation. However, these measures need to be checked using available evidence published in reports, in facilities’ statistics or through surveys. The process is repeated every 12 months in order to capture the dynamics of health systems and measure progress made in the various dimensions of sustainability.

4. Discussion

The Sustainability Analysis Process (SAP) presented here allows systematic exploration of quantity, quality and cost components to sustainable health systems in low-income countries and fragile states. Integral to the SAP is a consensus approach among diverse stakeholders that ensures local specificity and feasibility within each unique context.

The diversity of definitions of the concept of sustainability is widely recognized (Bell & Morse, 1999). In a systematic literature review, Gruen et al. (2008) analyzed 24 studies on sustainability assessment, which had been carried out in low- and middle-income countries and recognized that sustainability was understood in different ways by different people resulting in a diversity of sustainability assessment systems. In spite of these diverse definitions, there is a general consensus that sustainability indicators should be consistent, sensitive and easy to collect (Casley & Kumar, 1987), allowing managers to track distinct progress toward benchmarks and goals.

Through multi-stakeholder consensus the SAP also addresses political challenges in at least two dimensions. First, the concept of sustainability is upheld as normative. Second, the process avoids decisions taken by a limited number of “experts”. In other processes, experts who decide on what to sustain across a range of factors (ecological, economic, and social) are required to make normative decisions based on technical knowledge, but also on more or less explicit philosophical perceptions and political intentions. This implies that those participating in the process are not only acting in their technical expert capacity, but also as “political citizens” taking normative decisions on what aspects to uphold. The decision on “who participates” and “who decides” in indicator development workshops is thus a crucial one in the

Table 2
The sustainability indicators selected in Somaliland in February 2011.

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Sustainability indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimension 2</td>
<td>% of P&amp;O who produce 6–8 devices per month</td>
</tr>
<tr>
<td></td>
<td>% of PT who treat 10–15 people per day</td>
</tr>
<tr>
<td></td>
<td>% of devices that missed standard delivery times</td>
</tr>
<tr>
<td></td>
<td>Existence of national quality standards</td>
</tr>
<tr>
<td></td>
<td>% of devices that respect quality standards</td>
</tr>
<tr>
<td></td>
<td>% of PWDs who experience pain with their new device</td>
</tr>
<tr>
<td></td>
<td>Number of different suppliers of raw materials</td>
</tr>
<tr>
<td></td>
<td>% of regions with at least 2 PT Assistant and 2 P&amp;O Assistant</td>
</tr>
<tr>
<td></td>
<td>Number of PT and P&amp;O in Somaliland</td>
</tr>
</tbody>
</table>

Source: Karl Blanchet
P&O: prosthetist, orthesist; PT: physiotherapist.

Table 3
The reference system and sustainability level in February 2011 for every indicator of the service delivery component of the rehabilitation sector in Somaliland.

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Sustainability indicator</th>
<th>Reference system</th>
<th>Sustainability level in January 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimension 2</td>
<td>% of orthopedic technicians who produce at least 6–8 devices per month</td>
<td>100</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>% of physiotherapists who treat at least 10–15 people per day</td>
<td>100</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>% of devices that missed standard delivery times</td>
<td>100</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>Existence of national quality standards</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>% of devices that respect quality standards</td>
<td>100</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>% of PWDs who experience pain with their new device</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>% of rehabilitation centers with adequate level of equipment</td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Number of different suppliers of raw materials</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

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Sustainability Analysis Process, requiring both substantive expertise as well as balanced interest representation in a process that is essentially “norm-creating”. Admittedly, involving a wide range of diverse actors of the health system, including users, raises practical problems. First is the imbalance of power existing between different groups of stakeholders (Greene, 1997; Thurston & Potvin, 2003); second, some topics can be neglected on the agenda because people who defend them do not receive enough consideration within the group (Cornelissen, Van De Berg, Koops, & Udo, 2001; Kasemir, Van Asselt, & Durrenberger, 1999; Walt, 1996). These political aspects, how literature (Cimorelli & Stahl, 2005). Hence, different ways of bridging the two processes are used in the Sustainability Analysis Process presented here. As such, this methodology captures the tension between “knowledge production” and “norm creation” in a particular context with the gaps and resources at hand.

The SAP adeptly highlights the priorities of different country contexts. In our experience differences between countries were profound and the process allowed for these important specificities to emerge. For example, Somaliland participants focused on equity and coverage of services with indicators on distribution of professionals in the country and per region. This preoccupation is understandable in Somaliland where the main provision of services is heavily centralized in the capital with poor access for those who are in other regions of the country. Cambodia, on the other hand, is in the midst of handing over governance of rehabilitation services from international organizations to the Cambodian Ministry of Social Affairs. Indicators that emerged from the Cambodia workshops emphasized Ministerial responsibilities including budget allocation as key components of sustainability. In Nepal, the rehabilitation sector is composed of a high number of actors (Ref. Blanchet paper). SAP workshop participants in Nepal understandably emphasized coordination and cohesion within the sector, responsibility, accountability and power of professional organizations, as key factors for health system sustainability.

Limitations of the methodology are inherent to the process and context for which it was designed. For example, the consensus approach will more often than not lead to selection of indicators are not well defined. It could also be argued that the process resembles political negotiation and results in compromise, rather than consensus measures. In fragile states there is inherent difficulty to collect data. Health information systems are often weak, data collection expensive and time-consuming. In all five countries, workshops were all held among stakeholders at the national level. In all five settings, the exercise highlighted the inherent weaknesses in the country's health information system as a whole. We could expect that fear of failure among leaders and decision-makers may have limited truthful projections of sustainability to avoid embarrassment at term.

In each country where the methodology was tested, discussions at the outset were predictable. Scientists favored expansive datasets with the expectation that data would be published. Hopes were that decision-makers would use the data for rehabilitation sector planning. Politicians were generally wary of too much data, citing challenges such as unavailable resources needed for data collection, while underlying issues of accountability and power play were often implied. Scientists formulated detailed, specific, time-bound indicators. Policy makers favored indicators in broad and vague terms. The SAP introduced a process of negotiation, which was, in fact, a political negotiation, as no indicator could be published without consensus agreement of all stakeholders. As such, this multi-stakeholder consensus approach is both the inherent weakness and inherent strength of the methodology.
5. Conclusions

In this paper we present the Sustainability Analysis Process designed to surmount the challenges of conceptualizing and measuring sustainability of health systems in low-income and fragile states. Tested in five starkly different contexts, the methodology successfully brings scientific and political stakeholders to consensus with regards to sustainability of a given system of services through careful identification of system boundaries, local resources and potential developments. The sustainability indicators, which are locally defined, make it possible to visualize and track incremental change, even in highly volatile environments. Such a tailored approach, comprehensive of local challenges and opportunities, makes sustainability planning attractive and feasible to both planners and policy makers.

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