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## **Sustainable Consumption of Healthcare: Linking Sustainable Consumption with Sustainable Healthcare and Health Consumer Discourses**

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**Abstract:** Defined as “the capacity to endure,” sustainability is often an idealization that fields such as economics and the environment strive for in order to ensure their successful longevity. Naturally, as humanity is interested in safeguarding the fortitude and permanence of healthcare, literature pertaining to healthcare sustainability is, although small, in existence. Although one receives numerous hits for terms such as “sustainability of healthcare”, “sustainability of health care”, “healthcare sustainability”, “health care sustainability”, “sustainable health care”, “sustainable healthcare”, “consumption of healthcare” and “consumption of healthcare” in Google Scholar and Google no hit was obtained in Google or Google Scholar for the phrase “sustainable consumption of health care” or “sustainable

consumption of health care”. This suggests a disconnect between the three discourses of sustainable consumption, health consumerism and sustainable healthcare, a disconnect the authors posit that has to be rectified. The authors argue that it is necessary for the three discourses to connect in order to ensure the sustainability of healthcare and healthcare systems that meet the needs of the present and future generations

**Keywords:** sustainable healthcare; healthcare consumer; sustainability; consumption; sustainable consumption of healthcare.

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## **1. Introduction**

### *1.1. Introduction to sustainable development and its various discourses*

Since its inception in 1987 with the publication of the United Nation’s Brundtland report, the notion of sustainability has been an ever-present global focus[1-2]. The Brundtland report defines sustainable development (SD), as “ the development that meets the needs of the present without compromising the ability of future generations to meet their own needs” [2]. Three main pillars of SD can be identified namely economics, environment and social sustainability. Each pillar is seen as necessary for the success of SD. Beyond these three pillars many SD sub-discourses exist such as education for sustainable development, sustainability sciences, social sustainability, sustainable consumption, education for sustainable consumption, sustainable competitiveness, sustainable society, sustainable lifestyle, environmental sustainability and economic sustainability [3-29].

### *1.2 The discourse of sustainable consumption.*

Sustainable consumption is an active SD sub discourse. Sustainable consumption is linked to various discourses such as degrowth [30], green design and practices [31] and post carbon society [32]. If one searches Google Scholar for the phrase “sustainable consumption of,” over n=59 different target areas can be found with literature pertaining to the sustainable consumption of that target [33]. Many of these targets are resource linked [33]. The Resolution A/CONF.216/5 - A 10-year framework of programmes on sustainable consumption and

production patterns states: “Fundamental changes in the way societies produce and consume are indispensable for achieving global sustainable development” [34]. The same documents states further that the 10-year framework should affirm a common vision that among others:

“(i) Supports sustainable, inclusive and equitable global growth, poverty eradication and shared prosperity” [34]; “(ii) Addresses basic needs and brings a better quality of life” [34]; “(iv) Promotes gender equality and the active participation of groups including, inter alia, women, children and youth, indigenous peoples and those living in the most vulnerable situations” [34] and “(x) Serves as a tool to support the implementation of global sustainable development commitments, the achievement of the Millennium Development Goals and the implementation of targets and goals agreed under relevant multilateral environmental agreements” [34].

The Marrakesh Process for education for sustainable consumption was initiated to achieve “progress in the introduction of sustainable consumption and production (SCP) issues into formal learning processes considering appropriate links to non-formal and informal education” [35].

### *1.3. Healthcare Consumerism and Patient Driven Healthcare*

The nature of healthcare is changing, an era of “patient driven healthcare” is rapidly emerging [36]. We see more active ‘patients’ with clear ideas what they want as well as an active health consumer and health consumerism [36]. We see a move towards participatory medicine [37-38], patient-driven healthcare and research models [39-40] and quantified self-tracking [40-43]. These recent developments impact healthcare, which is a ‘product’ seen by many to not meet the need of the existing generation. These recent developments we posit will impact the sustainability of healthcare for future generations.

In the study presented here, we investigated what is seen to be in need of being sustained and what is seen as unsustainable within the academic discourse of “sustainable healthcare”/“sustainable health care” and whether linkages exist between the discourses of health consumerism, sustainable healthcare and sustainable consumption.

## **2. Experimental Section**

### *2.1 Data Sources*

We used the three academic databases of EBSCO(All), Science Direct and Scopus to obtain academic articles covering “sustainable healthcare”/”sustainable health care” by searching the three databases for the terms “sustainable healthcare” and ”sustainable health care”. We obtained n=153 articles; (n=97) from EBSCO(All), (n=16) from Science Direct and (n=40) from Scopus.

We used the Google Scholar and Google search engines to obtain quantitative data on the following terms “Sustainability of healthcare”, “Sustainable healthcare”, ”Healthcare sustainability”, “Sustainability of health care”, “Sustainable health care”, “Health care sustainability”, “Consumption of healthcare”, ”Healthcare consumption”, “Consumption of health care”, “Health care consumption”, ”Sustainable consumption of healthcare” and “Sustainable consumption of health care”.

Data collection from Google Scholar and Google commenced on May. 5, 2013, while the data collection from the online academic data bases EBSCO(All), Science Direct and Scopus occurred on Sept. 23/2013.

### *2.3. Data Analysis*

All of the articles collected from the three academic databases that were covering “sustainable healthcare”/”sustainable health care” were imported into ATLAS.ti<sup>©</sup> data analysis software (CAQDAS) in order to generate both qualitative and quantitative data[44-45]. The articles were coded using a deductive and inductive coding strategy. As to the deductive coding, we used the auto coding function of ATLAS.ti<sup>©</sup> to identify the sections in the articles that used the terms “sustainable healthcare” or “sustainable health care”. This gave us a sense of how many articles covered the topic in depth or just in passing. We then read the articles and coded for any theme present, which was linked to the terms “sustainable healthcare” or “sustainable health care”. To ensure consistency and accuracy, both authors conducted the coding. Any disparities between codes were resolved through discussion.

### *2.3 Limitations*

Although the authors were able to identify themes present in the articles obtained, the sources that were used for thematic analysis were obtained from only three academic databases. Thus, the results found are not necessarily applicable for the entire discourse on sustainable healthcare, as some scholarly articles deviating from the found themes may never have been acquired. In addition, some articles that resulted from our search of the academic databases were not accessible to us due to the University not having a subscription to the given article. Furthermore, our study did not look at non-academic literature. We also did not look at other variations that could have covered sustainable healthcare such as sustainability of healthcare or healthcare sustainability to just mention two. Finally, we only analyzed English language articles. Nevertheless, for the purpose of the study the data obtain allowed us to come to some conclusions related to the research questions we investigated.

### 3. Results

#### 3.1 Quantitative data on present themes in the sustainable healthcare discourse

Thematic analysis was conducted on a total of 153 articles from the three academic databases of EBSCO(All) (n=97), Science Direct (n=16) and Scopus (n=40). Within these 153 articles, 18 major themes were found related to sustainable healthcare. The themes were “methods for achieving sustainable healthcare (n=28)”, “cost effectiveness and resource allocation (n=15),” “challenges for achieving sustainable healthcare (n=14),” “education (n=13),” “medical services/resources (n=12)”, “models/frameworks for achievement (n=12),” “architecture and building design (n=10),” “waste management (n=10),” “business (n=7),” “consumers (n=6),” “eco-initiatives and environmental concern (n=6),” “healthcare change (n=6),” “quality (n=6),” “organizations/initiatives (n=4),” “Financing (n=3),” “Locations striving for sustainable healthcare (n=3),” “defining sustainable healthcare (n=2),” and “healthcare rights (n=2).”

Within these themes the following subthemes were present.

**Table 1.** Frequency analysis of all quotations relating to the theme of “eco-initiatives/environmental concerns.”

<b>Eco-initiatives/Environmental Concerns:</b>	
Ecologically sustainable healthcare	3

Code Green- role of nurses in creating sustainable healthcare designs	2
Healthier Hospitals Initiative	1
<b>Education</b>	
Internalizing sustainable healthcare responsibility through interprofessional education	7
Sustainable healthcare education network (SHE)	4
Sustainable healthcare education	1
Practice Greenhealth and Hospitals for a Healthy Environment provide network for education about sustainable healthcare	1
<b>Cost Effectiveness and Resource Allocation</b>	
Economic evaluations-identify resource allocation and efficient programs	5
Health technology assessment (HTA) needed for sustainable healthcare	4
Additional costs of sustainable healthcare	2
Cost effectiveness for appropriate resource allocation (HIV prevention and drug abuse treatment)	1
Demand side financing may not be beneficial for sustainable healthcare	1
Better care at a lower cost that will bend the cost curve of unsustainable healthcare spending	1
In order to meet public health needs, sustainable healthcare systems require the long-term capacity to mobilize and allocate resources	1
<b>Architecture and Building Design</b>	
Sustainable healthcare architecture	9
Geospatial techniques to assess spatial patterns of healthcare institutions	1
<b>Waste Management</b>	
Hazardous waste conservation/healthcare waste management	6
Inefficient delivery of sustainable healthcare waste management strategies	4
<b>Medical Services/Resources</b>	
GP's in sustainable healthcare	4
Limited use of cost effective smoking cessation programs	2
Importance of primary healthcare	2
Is delivery of siRNA therapeutically part of a sustainable healthcare system?	1
Natural products important to sustainable healthcare systems	1
Medical technologies	1
Medicinal plants	1
Generic medicines	1

Vaccines	1
<b>Challenges for Achievement</b>	
Difficulty in achieving sustainable healthcare	6
Lack of a shared understanding of sustainable healthcare	2
Sustainable healthcare is challenging in Alaska	1
Border between North/South Korea results in sustainable healthcare challenges	1
Overutilization of acute care	1
Issue of rapid change needed for sustainable healthcare in the future	1
Sustainable healthcare systems are untapped	1
Slow progress to sustainable healthcare	1
<b>Models/Frameworks for Achievement</b>	
International sustainable healthcare strategy	3
Maslow's hierarchy of needs or some sort of framework needed to determine organizations preparedness for sustainable healthcare	3
Sustainable healthcare models	2
Sustainable healthcare will involve complete change of service delivery	1
New models of sustainable delivery	1
Targeted promotion of functional independence	1
COBES model	1
<b>Consumers</b>	
Sustainable healthcare consumerism framework	2
Expanding roles of education and health consumers	2
Sustainability will involve both the patients and providers	1
Importance of self-care	1
<b>Methods for Achieving Sustainable Healthcare</b>	
Promoting/achieving sustainable healthcare	7
Multiple aspects of healthcare must be human centered for effective sustainability	3
Coordination needed at all levels of healthcare pyramid	3
Development of sustainable healthcare policies	2
Sustainable healthcare delivery	2
Horizontal services	2
Canada Health Act enforce it's principles while maintaining sustainability	1
Sustainable healthcare workforce in developing countries	1
Skilled sustainable healthcare workforce	1
Humanitarian efforts in sustainable healthcare	1
Need for efficient instruments (especially for large elderly population)	1

Policy increasing it's focus on sustainable development	1
Sustainable healthcare supported through community involvement	1
Promotion of functional independence (to help sustainable healthcare)	1
Supporting competition/innovation in order to provide sustainable healthcare	1
<b>Quality</b>	
Quality indicators in Lithuania	2
Assessing primary healthcare performance	1
Sustainable healthcare to give quality care	1
Quality not sufficient for sustainable healthcare	1
Quantifying use of traditional medicine at the household level (developing nations)	1
<b>Financing</b>	
Economic and human resources are becoming scarce	1
Healthcare financing	1
Involvement of the world bank to improve healthcare systems	1
<b>Business</b>	
Sustainable healthcare entrepreneurs	3
Sustainable healthcare lacks a business model	2
Business ventures for sustainable healthcare (at BoP)	2
<b>Healthcare Change</b>	
Sustainable healthcare innovation	3
Sustainable healthcare reform	2
Transition of the healthcare sector is needed to achieve more sustainable healthcare in the future	1
<b>Healthcare Rights</b>	
Sustainable healthcare rights	1
Providing sustainable healthcare to underprivileged communities	1
<b>Locations Striving for Sustainable Healthcare</b>	
Sustainable healthcare in Thailand	1
Sustainable healthcare in India	1
Sustainable health for population and sustainable health system for England	1
<b>Organizations and Initiatives</b>	
National Information Learning Centre (NILC)	2
Canadian Alliance for Sustainable Healthcare	1
Alliance for Natural Health	1
<b>Definitions</b>	
Defining sustainable healthcare	2

*3.2 Quantitative data on sustainable healthcare, healthcare consumption and sustainable consumption of healthcare from Google Scholar and Google*

**Table 2.** Frequency analysis for healthcare sustainability, healthcare consumption and the two streams combined searched on Google Scholar and Google.

<b>Searched Phrases:</b>	<b>Number of Results in Google Scholar:</b>	<b>Number of Results in Google</b>
Sustainability of healthcare	302	123,000
Sustainable healthcare	1,640	178,000
Healthcare sustainability	147	16,200
Sustainability of health care	754	453,000
Sustainable health care	2, 600	2,360,00
Health care sustainability	172	156,000
Consumption of healthcare	840	265,000
Healthcare consumption	1, 280	14,700
Consumption of health care	3,060	375,000
Health care consumption	4, 740	366,000
Sustainable consumption of healthcare	0	0
Sustainable consumption of health care	0	0

#### **4. Discussion**

The thematic analysis of the academic literature around sustainable healthcare revealed that the economic and environmental pillars of sustainability are well represented in the sustainable healthcare discourse. The environmental pillar is present in themes such as eco-initiatives and environmental concern and waste management. Furthermore, several themes not directly relating to the two pillars of economics and environment still had economic or environmental undertones. For example, when discussing architectural design of health service buildings, design was considered for environmental impact and not necessarily to better serve healthcare consumers/patients [46]. The economic pillar is represented in themes such as cost-effectiveness and resource allocation and finance. To just give one quote, “Effective pharmaceutical pricing and reimbursement systems, based on health technology assessment

(HTA) that encompasses economic evaluations are essential to an efficient sustainable health care system [47].” However the social pillar of sustainability is mostly absent in the literature covered. Articles that for example cover economic issues do not make the linkage to affordability of healthcare and healthcare products for people of socially disadvantaged groups. This disconnect goes beyond the articles covered in our study. Social sustainability is in general disconnected from the sustainable healthcare discourse (only n=37 hits are obtained in Google scholar if “social sustainability” is searched with “sustainable healthcare”). We posit that the lack of mention of social dynamics is a problem if one believes in an equitable healthcare system. We posit it is impossible to “meet the needs of the present without compromising the ability of future generations to meet their own needs” [2] unless all dimensions of sustainability are considered in their entirety. One article argues that “the increasing policy focus on sustainable development offers new opportunities to align the public health narrative with that of sustainable development to promote both sustainable health for the population, and a sustainable health care system for England”[48]. However, what does this promotion look like if the sustainable healthcare narrative is focusing on economic and environmental aspects mainly? Will a narrative that misses the ‘social’ lead to health equity and the fulfillment of the right to healthcare? The 10-year framework of programmes on sustainable consumption and production patterns is to support equitable global growth, poverty eradication and shared prosperity; addresses basic needs and increase quality of life; promote active participation of groups including, inter alia, women, children and youth, indigenous peoples and those living in the most vulnerable situations and is to serve as a tool to support the achievement of the Millennium Development Goals [34]. We posit the social sustainability pillar is positioned to promote and monitor this goals given that social sustainability is associated with health equity and human rights [49]. As to our articles covered, human rights linkage to sustainable healthcare was mentioned only twice out of the 153 articles; one article talked about Brazil path towards sustainability and equity in health [50] and one article with the title Access, Equity and the Role of Rights in Health Care had a section on Sustainable Health Care Rights [51].

Beyond that we posit that the social sustainability lens has to be more employed in discussing sustainable healthcare, we argue that other linkages are required such as between social

sustainability and health consumerism (only n=3 hits in Google Scholar) and sustainable consumption and health consumerism (only n=1 hit in Google Scholar). Uniting all of these discourses together will allow for a discourse around “sustainable consumption of healthcare,” which as a phrase had no hits in Google Scholar or in the academic literature, as our study revealed.

One article covered in our study argues that self-care is an essential role of health consumers for ensuring a sustainable healthcare system [52]. Another article thematizing the issue of sustainable healthcare and health consumerism argues that one of the contributing factors to the increase in health care costs “was the lack of consumer awareness of the cost of health care service, the effect of health care costs on profits and wages, and the need to engage consumers more actively as consumers in health care decisions” [53]. We posit that patient driven healthcare, and the areas of participatory medicine [37-38], patient-driven healthcare and research models [39-40] and quantified self endeavours [40-43] exhibit a deficiency in discussing the impact of these new ways to perform healthcare on equitable healthcare [36] and sustainable healthcare. Health technologies are constantly evolving and we are at the brink of therapeutic technologies that give the patient body abilities beyond the normal (therapeutic enhancement) [54]. These enhancements change the very framework of various health discourses [55]. However, so far these new classes of health technologies are not discussed within the framework of health consumerism, despite that they are expected to even change who defines oneself as a health consumer [56]. We posit these body linked health technologies that add new, beyond the normal, abilities to the body as well as the many other health technologies that allow for self-diagnostic and self-care, will add a new form of impact to the goal of sustainable healthcare. This is especially if one takes a global view, as one article did when the authors stated that “[a]n international strategy is required to promote sustainable healthcare systems worldwide.[57].

Only one article in our study looked at sustainable healthcare consumerism. The authors outlined the following keys to building a sustainable healthcare consumerism framework [53] a) integrate “health” into business strategies; b) fine-tune incentives consistent with value-based designs and realign cost sharing to charge patients more for discretionary spending

with unclear value, while at the same time, lower patient barriers for high-value services in order to optimize health outcomes; c) making the right choice the easy choice; d) develop a shared decision-making model; e) deploy new and more effective technologies related to personalization, such as personal health records and biometric monitoring; f) work with health plans and vendors to implement health improvement and prevention programs; g) develop strategies that impact both short term and long term [53]. We posit that this framework needs intensive coverage through a social sustainability lens that includes socially disadvantaged groups to ensure that the values used are not decreasing the change for equitable healthcare and equitable healthcare system. The same is true for the two other articles that provide some assessment tools for sustainable healthcare[58-59] and sustainable healthcare system [58]

## **5. Conclusions**

We found a) that a discourse around sustainable consumption of healthcare was non-existent as evident by our Google and Google Scholar searches (Table 2) and b) that the social aspect was not covered much within the academic sustainable healthcare literature that we reviewed (Table 1). We submit that both deficiencies have to be rectified. We submit that the health consumerism discourse has to be linked to the social sustainability and the sustainable consumption discourses. We submit that a global “sustainable consumption of healthcare” discourse is needed around the questions of which health consumer patterns, a) are sustainable; b) increase inequity in access to healthcare in general and a variety of healthcare products and c) decrease quality of healthcare as measured in various countries by various health system indicators (e.g. Canada [60]). This is necessary if the Brundtland report premise of meeting the needs of today’s generation and future generations are to be met [2] which we posit includes access to healthcare. We submit that the Marrakesh Process for education for sustainable consumption [35] might be an essential venue through which to increase the scope of the sustainable consumption discourse.

## **6. Acknowledgements**

## **7. Conflict of Interest**

The authors declare no conflict of interest.

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