

Understanding treatment burden in adults with multimorbidity in the Singapore primary care setting: An exploratory study using the Multimorbidity Treatment Burden Questionnaire

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Dear Editor,

Patients with multimorbidity often undertake several tasks to manage their health. These include learning about their conditions, taking medications correctly, implementing lifestyle changes, etc., which can be overwhelming and burdensome.¹ Their perceptions of the effort required to manage their health conditions and its impact on their general well-being are known as treatment burden.¹ Although, treatment burden is often overlooked by healthcare providers, there is growing recognition of its negative effects on medical adherence, quality of life and wasted healthcare resources.^{1,2} Dobbler et al.¹ and the National Institute for Health and Care Excellence (NICE) guidelines³ have suggested incorporating treatment burden into the clinical practice guidelines recommendations to better inform clinicians of the associated benefits and burden.

To enable prompt assessment of treatment burden, the Multimorbidity Treatment Burden Questionnaire (MTBQ) was developed⁴ and validated across various countries.^{5,6} These studies showed how different healthcare systems and cultural health beliefs influenced the treatment burden experienced. Singapore's unique healthcare environment, with its uneven distribution of chronic and acute care across public and private care sectors⁷ and emphasis on individual healthcare co-payment,⁸ may influence patients' treatment burden distinctly.

Understanding treatment burden can help policymakers and healthcare providers manage the healthcare workload by patients, and is in line with the national "Healthier SG" goals of transforming primary and community care delivery to improve population health and quality of life for the long term. We conducted an exploratory study describing the treatment burden in adults with multimorbidity in a public primary care clinic in Singapore using the MTBQ, with the aim

of understanding its prevalence in our sample population, the domains of treatment burden that affected the most participants, and the factors associated with having treatment burden. Ethical approval was obtained from the National Healthcare Group Domain Specific Review Board (Reference 2021/00004) prior to commencement of the study.

Participants that had multimorbidity, i.e. self-reported having 3 or more chronic conditions,⁹ completed a self-administered questionnaire about their chronic conditions, demographic information and treatment burden (MTBQ). The MTBQ consists of 13 items requiring participants to rate their difficulty in performing specific healthcare tasks over a 5-point Likert scale, from "0" (not difficult) to "4" (extremely difficult), with an additional option of "does not apply". Returned surveys with 2 or fewer conditions reported, i.e. no multimorbidity, or more than 50% missing responses for the MTBQ section, were excluded.⁴ The sample size was 264, based on the estimated proportion of participants with no treatment burden (22%),⁴ confidence interval of 95%, and width of 0.1. Treatment burden was assessed dichotomously as "no treatment burden", i.e. reporting "not difficult", "does not apply" or no response to 13 items of the MTBQ; versus "having treatment burden", i.e. reporting difficulty ("a little" to "extremely") to at least 1 or more of the 13 items. Data analysis was conducted using R Core Team version 4.1.2 (R Foundation for Statistical Computing, Vienna, Austria).

The study had a response rate of 75.4% and included 264 participants after excluding 39 for declaring less than 3 conditions (no multimorbidity) and a further 21 for answering less than half of the MTBQ. Participants were mostly male (62.5%) and Chinese (73.9%), with mean age of 62.9 ± 9.9 years. The proportion of participants with 3, 4 and 5 or more chronic conditions were 42%, 25.8% and 31.8%, respectively.

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Most (67.8%) had treatment burden and the most commonly reported burdens were “making recommended lifestyle changes” (35.6%) and “taking lots of medications” (34.5%). The majority of participants had no difficulty “collecting prescription medications” (75%), “obtaining clear and up-to-date information about [their] conditions” (71.6%), and “arranging appointments with health professionals” (70.5%). A large proportion (68.9%) reported that “getting help from community services” did not apply to them (Table 1).

We conducted binomial logistic regression, adjusting for sociodemographic factors and chronic conditions, to understand the factors associated with having treatment burden. Participants younger than 65 years and those with 5 or more chronic conditions had higher odds of having treatment burden compared to those who were older and those with 3 conditions (odds ratio [OR] 2.22, 95% confidence interval [CI] 1.17–4.17, $P=0.01$; and OR 3.54, 95% CI 1.77–7.10, $P<0.01$, respectively).

Our study is the first study to explore treatment burden in a public primary care setting in Singapore, and it showed the significant burden experienced by adults with multimorbidity. We

also demonstrated that younger/middle-aged adults and those with 5 or more chronic conditions had higher odds of treatment burden, which is in keeping with other studies.^{4,5} The ability to promptly screen and assess treatment burden may be key to optimising care, and the self-administered nature of our study and its good response rate demonstrated the potential utility and feasibility of using the MTBQ to measure treatment burden in research and clinical practice. However, further validation of the MTBQ in the local healthcare setting is needed. In particular, more work is required to determine the applicable domains of the MTBQ, its reliability, and its scoring system with the minimally important difference. Subsequently, the actual impact of treatment burden on health outcomes and expenditure in our local healthcare setting needs to be established, especially with regard to the higher-risk subpopulations identified in our study.

By highlighting the aspects of treatment burden that affected the most and the least participants, our study also demonstrated the potential of the MTBQ as a valuable patient reported outcome measure.¹⁰ It can give healthcare professionals an overall view of the burden from their combined

Table 1. Results of answers to individual MTBQ questions.

Question	Difficult*		Not difficult		Does not apply		No response	
	n	(%)	n	(%)	n	(%)	n	(%)
1. Taking lots of medications	91	(34.5)	154	(58.3)	19	(7.2)	0	(0.0)
2. Remembering how and when to take medication	73	(27.7)	177	(67.0)	13	(4.9)	1	(0.4)
3. Paying for prescriptions, over the counter medications or equipment	60	(22.7)	183	(69.3)	19	(7.2)	2	(0.8)
4. Collecting prescription medication	54	(20.5)	198	(75.0)	10	(3.8)	2	(0.8)
5. Monitoring your medical conditions	74	(28.0)	172	(65.2)	16	(6.1)	2	(0.8)
6. Arranging appointments with health professionals	58	(22.0)	186	(70.5)	20	(7.6)	0	(0.0)
7. Seeing lots of different health professionals	75	(28.4)	122	(46.2)	62	(23.5)	5	(1.9)
8. Attending appointments with health professionals	72	(27.3)	140	(53.0)	50	(18.9)	2	(0.8)
9. Getting health care in the evenings and at weekends	47	(17.8)	99	(37.5)	111	(42.0)	7	(2.7)
10. Getting help from community services	22	(8.3)	49	(18.6)	182	(68.9)	11	(4.2)
11. Obtaining clear and up-to-date information about your condition	34	(12.9)	189	(71.6)	36	(13.6)	5	(1.9)
12. Making recommended lifestyle changes	94	(35.6)	135	(51.1)	33	(12.5)	2	(0.8)
13. Having to rely on help from family and friends	36	(13.6)	116	(43.9)	108	(40.9)	4	(1.5)

* Responses for “extremely”, “very”, “quite” and “a little difficult” were combined.

treatments on patients and guide clinical decision making and treatment choices. Additionally, the MTBQ also assesses the impact of healthcare services and delivery on patients' health-related quality of life, and can be used to inform policies and programmes.

Our exploratory study highlights the high prevalence of treatment burden, its important aspects and associated factors in a public primary care population with multimorbidity. Our findings underline the importance of detecting and minimising treatment burden, and can guide future research to understand treatment burden in a larger, more representative population to improve health outcomes and quality of care.

Ethics

Ethical approval was obtained from the National Healthcare Group Domain Specific Review Board (Reference 2021/00004) prior to commencement of the study.

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Keywords: *health-related quality of life, multimorbidity, primary care, treatment adherence, treatment burden*

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