Best-Worst Scaling in Health Economics in China: Past, Present and Future

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Objectives

Best-worst scaling (BWS) increasingly becomes an attractive instrument worldwide to quantify preferences for health. However, the general state and quality of health-related BWS was not reviewed.

The aim of this study was to identify all health-related BWS worldwide and to provide a description of current practice and future challenges.

Methods

A systematic literature review was conducted to identify health-related BWS published before 2020.

The assessment focused on five issues:

I. Identification of attributes and levels;

II. Experimental design; **III. Econometric analysis;**

IV. Validity of responses; **V. Interpretation of results.**

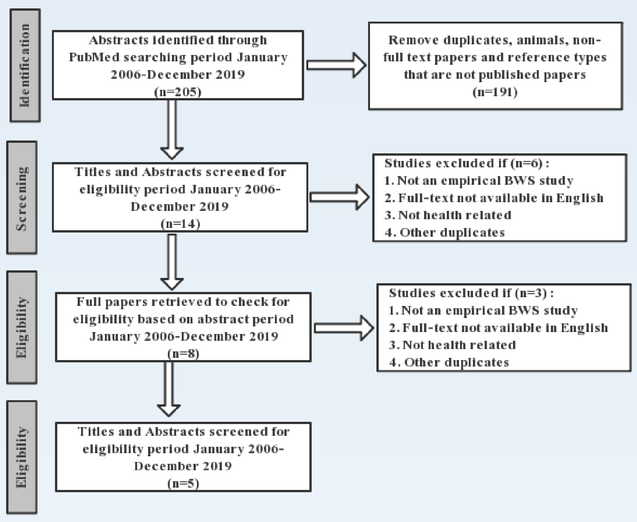

Fig. 1 Flow diagram of systematic literature review to identify Best-Worst Scale (BWS)

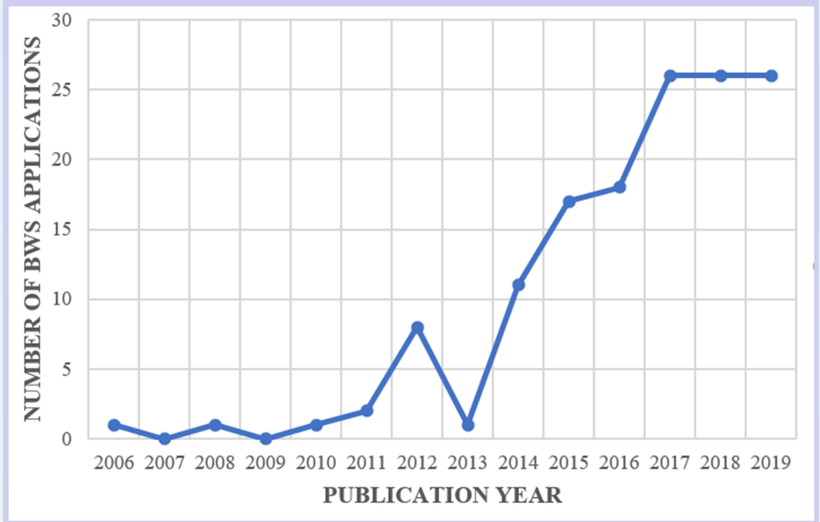

Fig. 2 Number of Best-Worst Scale (BWS) applications by publication year

Results

Of the 14 abstracts we screened, 5 studies were included for data extraction and validity assessment. The studies we identified covered health human resource and health-related quality of life measurement, with the application of qualitative methods (e.g., focus group) to identify attributes and levels. Sophisticated designs (e.g., D-efficient) and flexible econometric models (e.g., mixed logit) were used for estimation. However, no study presented sufficient methodological details. The validity of responses was not adequately considered, due to the lack of internal validity tests incorporated within BWS questionnaire.

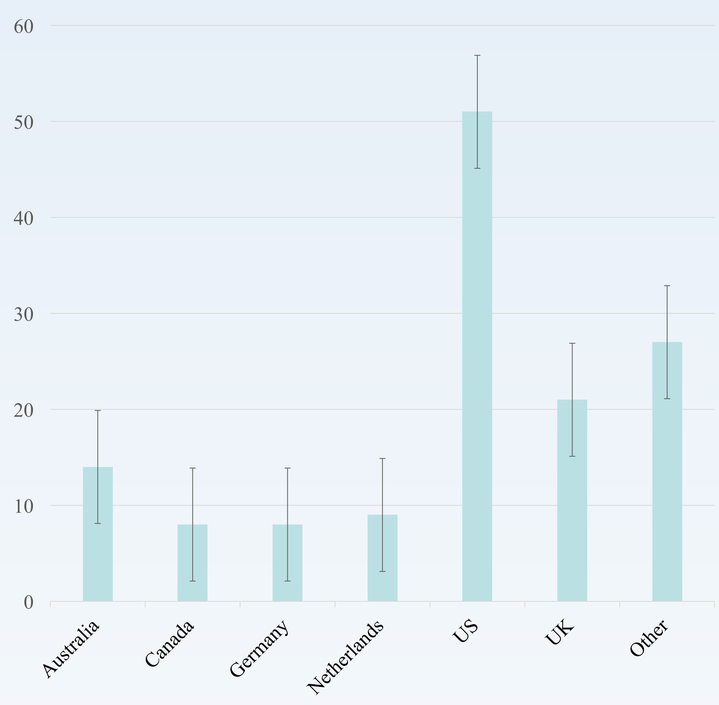

Fig. 3. Number of Best-Worst Scale (BWS) applications by country

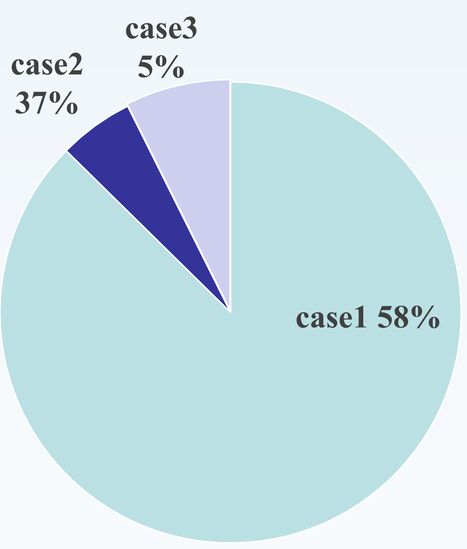

Fig. 4 Number of case1, case2, case3

Table1 BWS Background information

Item	Category	Number of papers 2006-2008	Number of papers 2009-2011	Number of papers 2012-2014	Number of papers 2015-2017	Number of papers 2018-2020
		N=2	N=3	N=20	N=61	N=52
Number of attributes	2-3	0	0	0	1	2
	4-5	2	0	3	10	6
	6	0	0	5	6	2
	7-9	0	1	3	19	11
	10	0	0	2	3	4
	>10	0	2	7	22	27
Number of choices per individual	≤8	0	1	1	4	8
	9-16	1	0	12	28	26
	>16	1	1	7	25	18
	Not clearly	0	1	0	4	0
Number of alternatives	2-4	1	0	6	23	22
	5-6	1	1	8	20	24
	>6	0	2	6	18	6
Type of sample	Patients	1	1	4	23	16
	Physician	0	0	2	5	8
	General population	1	1	7	9	10
	Others	0	1	7	24	18

Table 2 BWS Experimental design information

Item	Category	Number of papers 2006-2008	Number of papers 2009-2011	Number of papers 2012-2014	Number of papers 2015-2017	Number of papers 2018-2020
		N=2	N=3	N=20	N=61	N=52
Design type	Full factorial	1	0	0	0	1
	Factorial factorial	0	2	12	30	25
	Not clearly	1	1	8	31	26
Design plan	Main effects only	2	1	11	32	15
	Main effects and two-way interactions	0	0	3	2	3
	Not applicable	0	2	6	27	34
Blocking	Yes	0	1	7	16	15
	No	2	2	13	45	37
Design software	Ngene	0	0	1	3	9
	SAS	0	0	5	9	9
	Sawtooth	0	2	2	17	5
	Other	1	0	4	11	6
	Not clearly	1	1	8	21	23
Methods to create choice sets	Orthogonal: single profles (binary choices)	1	1	9	17	8
	Orthogonal: random pairing	0	0	0	3	1
	Orthogonal: foldover-random pairing	1	0	1	0	0
	Orthogonal: foldover	0	0	0	0	2
	D-efficiency	0	0	0	2	4
	Bayesian D-efciency	0	0	1	1	2
Econometric analysis model	Multinomial logit	0	0	2	8	6
	Conditional logit model	0	0	8	16	9
	Random effects logit (random intercept)	1	0	1	2	4
	Mixed logit (random parameter)	0	0	3	7	5
	Latent class	0	0	2	11	7
	Other	0	1	2	2	6
	Not clearly	1	2	2	15	15

Conclusions

The use of empirical BWS covered important health policy questions and boosted preference elicitation worldwide. Inadequate disclosure of methodological details impedes quality assessment and indicates an early stage of development in BWS application. Careful identification of attributes, efficient design, advanced models to incorporate heterogeneities, adequate assessment of external and internal validity, appropriate interpretation of results may contribute to the integration of health-related BWS into the decision-making process.

References

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