

Indian Physician Job Satisfaction Scale: Development and Validation

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ABSTRACT Physician satisfaction is critical not only for their own well-being but also for the welfare of the patients. Physician satisfaction scales developed elsewhere in the world may not be appropriate in the Indian context. The aim of this study was to develop and test a reliable measure of physician satisfaction in the Indian context. Development of Indian Physician Satisfaction scale was a four step process. Review of literature for generating initial item pool, focus group discussion and pre-pilot study for consolidating the item pool, pilot study and finally validation of the instrument. Literature review yielded eighty-two item scale representing eleven facets (sixty-seven items) and three overall satisfaction measures (fifteen items). The refinement of the scale on the basis of content validity, data quality and construct validity led to a final instrument with fifty-one items constituting eight facets (forty-three items) and two global measures (eight items) of satisfaction. The internal consistency ranged between .776 to .907 (except autonomy which had internal consistency of .639) IPSS (Indian Physician Satisfaction Scale) appears to be a reliable and valid measure of physician satisfaction in Indian context. However, further research should be carried out covering more specialties and pan India.

INTRODUCTION

The present doctor to population ratio in India stands at 1: 1800 against 1: 1000 recommended by WHO (Deo 2013). The high cost of educating and training the physicians along with the fact that there exists significant shortage of physicians, dissatisfied or poorly satisfied physicians may significantly enhance intangible costs - high turnover, low productivity and poor quality of care. Although, several studies pertaining to physician satisfaction have been carried out across the globe, in India little has been done in this area.

Previous studies have correlated physician satisfaction with increased patient compliance (DiMatteo 1993; Haas 2000), and satisfaction (Linn 1985), and physician dissatisfaction with riskier prescribing profiles (Melville 1980), and increased tendency to quit (Pathman 1996; Hann 2011, Dyrbye et al. 2013). Physician shortages in 2006 led many hospitals in Japan to limit service provisions (Ozaki et al. 2008). While, some hos-

pitals closed departments others were forced to shut down completely, doctors having “escaped” from hospitals owing to low motivation and high workload (Komatsu 2006). Further, current physician dissatisfaction has a bearing on the future supply of doctors (Lewis 1991), burn-out (Diez-Pinol 2008; Dyrbye et al. 2013), turnover (Samad 2006; Vultee 2007; Hann 2011), mental/psychological and physical well being (Lavanchy 2004; Ofili 2004; Dyrbye et al. 2013), and work-life balance of doctors (Malik 2010; Dyrbye et al. 2013).

Since physician satisfaction not only has a bearing on the physicians themselves but also on the patients as well. It is, therefore very important and desirable to understand the factors that affect physician satisfaction. Even though the topic of physician satisfaction has been the focus of extensive investigation elsewhere in the world, very little work has been done in this field in India. The present paper aims at taking baby steps in this area and attempts to develop a reliable and valid job satisfaction measure for Indian hospital physicians.

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METHODOLOGY

A four- step process was adopted for the development of the scale. The first step involved

thorough review of literature for generating the item pool as well as identifying the various facets of physician job satisfaction. The second step comprised of focus group discussion and pre-pilot study for the consolidation of the item pool and facets followed by a pilot study to check the reliability of the scale and finally a comprehensive study for validating the scale (using factor analysis and Cronbach's alpha).

Literature Review-Generation of Item Pool

A preliminary insight into the components of job satisfaction was obtained through systematic review and analysis of previous measures of physician job satisfaction.

The pioneering work of Stamps (1978) and Lichtenstein (1984) in the development of multifaceted physician job satisfaction scale led to more sophisticated and reliable techniques by Lloyd et al. (1994) and Stamps and Cruz (1994).

Lichtenstein (1984) in his study of 588 prison doctors identified 6 facets (resources, self-directed autonomy, other-directed autonomy, patient relationships, professional relationships and status) of physician job satisfaction composed of 33 items. An item measuring satisfaction with pay, the seventh facet of satisfaction was treated separately and measured. The internal reliability of the set items as evaluated using Cronbach's alpha was 0.861.

Mueller and McClosky Satisfaction Scale (Mueller 1990) developed to measure the satisfaction of nurses incorporated thirty-one items covering eight facets. Dentist Satisfaction Scale (DSS) suggested by Shugars and Dimatteo (1991) consisting of 11 specific dimensions of job satisfaction: (i) staff (ii) income (iii) professional relations (iv) professional time (v) patient relations (vi) practice management (vii) personal time (viii) professional environment (ix) respect (x) job stress and (xi) delivery of care, assesses both facet and overall satisfaction among dentists. Internal consistency reliability coefficients for all facet subscales and the overall job satisfaction scale ranged from .60 - .92.

Stamps and Cruz (1994) in their study for developing multidimensional instrument for measuring the physician job satisfaction identified six factors: personal issues, resources for practice, review by profession, satisfaction with medicine as a profession, regulatory climate of

Massachusetts and the fact that Massachusetts is a good place to practice.

Bates et al. (1998) predicted four dimensions of physician work satisfaction: relationship with patients, autonomy in clinical decision making, office resources and professional relationships.

Williams et al. (1999) in a further refinement of the multidimensional physician satisfaction measure as proposed by Konrad et al. (1998) developed an instrument consisting of ten factors (autonomy, relationship with colleagues, patient care issues, relationships with patient, relationships with staff, personal time, community, pay, administration, resources, global job satisfaction, global career satisfaction, and global specialty satisfaction) having 36 items. The proposed scale has lower sub scales reliabilities (range, 0.65 - 0.88) than Lichtenstein's (1984) (0.70 - 0.86), and Stamps and Cruz's (1994) (0.70 - 0.84).

Bovier and Perneger (2003) suggested a seventeen item work satisfaction scale addressing five dimensions of physician job satisfaction: patient care, work related burden, income-prestige, personal rewards and personal relations. The subscale and global measures of the instrument had reliabilities in the range of .66 - .83. Since, only physicians practicing in a Swiss urban environment where medical density is high were surveyed, the researchers have therefore cautioned against generalizations of the results outside of the settings.

Highly turbulent work environment manifested by downsizing, reengineering and incorporation of new technologies has fuelled widespread interest in workplace spirituality (Cash and Gray 2000). Komala and Ganesh (2007) in their study of doctors and nurses working in Government, Private and Charitable hospitals in the cities of Bangalore and Chennai in India explore the relationship between individual spirituality at work and job satisfaction and burnout in healthcare professionals. The short form of Minnesota Satisfaction Questionnaire (MSQ) was used to measure job satisfaction. Pearson correlation coefficient of 0.413 between individual spirituality at work and job satisfaction indicates significant correlation among the two components.

Japanese Hospital Physician Satisfaction Scale (JHPSS) developed by Ozaki et al. (2008) consists of 28 items, 6 sub-scales: (i) Relationship with other medical doctors (ii) Burden and business (iii) Community (iv) Relationship with

co-medical staff (v) Compensation and (vi) Patient care issues and two global satisfaction scale measures: (i) Global job satisfaction (ii) Global career satisfaction. Cronbach's alpha for all these subscales were .7 or higher.

Initial Item Pool

An initial item pool of sixty seven items corresponding to eleven factors (Table 1) was identified on the basis of literature for measuring different facets of job satisfaction. In addition three factors having fifteen items for measuring global satisfaction were identified (Table 1a).

Pre-pilot Study

The qualitative or content validation of the scale was carried out through focus group discussion and a pre-pilot study. The pre-pilot study involved 52 respondents (26 doctors and 26 practicing human resources professionals). The respondents were requested to rate the 11 factors representing different facets of physician job satisfaction on a 5 point scale (from least important to most important) as determinants of job satisfaction among physicians and then classify the items into factors as per their understanding. The factors which were given a rating of 3 and above by 80% or more of the respondents were included for further study (Table 2) similarly items which were classified into a particular factor by 80% or more of the respondents were accepted while others were rejected.

In accordance with the above criteria two factors: Administration and Spirituality along with their corresponding items were deleted from the scale. The resultant scale comprising of nine facets of satisfaction (sixty items) and three global measures (fifteen items) was used for pilot study.

Since, no ambiguity emerged and consequently no changes were suggested during focus group discussion regarding overall/global job satisfaction of physicians, all the three facets namely job satisfaction, specialty satisfaction and career satisfaction along with their constituent items were taken up for pilot study as such.

Pilot Study

Pilot survey comprising of 50 physicians (males 35; females 15; having own hospital 7;

employed in Government hospital 21; employed in private hospitals 22; post graduates 46; doctorates 4; experience 6 years and above 30; experience 3 years to less than 6 years 9; experience less than 3 years 11; Gynecologists 6; Pediatricians 7; Medical specialists 26; General surgeons 8; Orthopedicians 3) was conducted in order to establish reliability of the factors.

The responses were obtained on a five point scale (completely disagree to completely agree). The questionnaire was distributed and collected personally as well as through email. The respondents were primarily from the north-western region of India.

ANALYSIS

Facet Satisfaction Scale

Cronbach's alpha was used as an internal consistency index for each of the factors and three global satisfaction factors. An alpha value equal to or greater than 0.7 was considered satisfactory. Since, two factors namely Administration and Spirituality were obliterated from the study on the basis of pre-pilot. Reliability for the remaining factors was performed using SPSS. Analysis of the reliability results (Table 3) indicated that two factors namely autonomy (0.621) and relationship with patients (0.322) had Cronbach's alpha less than 0.7. However, literature suggests (Lichtenstein 1984; Konrad et al. 2003) autonomy to be an important parameter determining satisfaction and as such was retained for further study while relationship with patients although an important parameter was detained on account of very low reliability. Further, specialty satisfaction was also removed as Cronbach's alpha was less than 0.7.

On the basis of pilot study the researchers were able to refine their proposed scale, item AT4 with inter-item correlation -0.008 (Non physicians are not permitted/allowed to question my professional judgment) corresponding to autonomy, item RS 2 (people in administration are respected) with inter-item correlation of 0.292 was also removed from the facet relationship with staff. Two items ER4 (Competition among doctors is not a threat to my financial future) and ER 5 (As compared to physicians from other specialties I am well compensated) corresponding to employee earnings were also removed on account of low inter-item correlation with the scale (-0.126 and 0.201 respectively).

Table 1: Initial item pool (Facet Satisfaction)

<i>Item code</i>	<i>Facet satisfaction – Item pool</i>
	<i>Autonomy</i>
AT1	My present position gives me an opportunity to provide full range of services for which I am trained (Konrad et al. 1998).
AT2	My present position allows me to set the pace of my work (Lichtenstein 1984).
AT3	My present position allows me to receive inputs into my decisions affecting patient care (Lichtenstein 1984).
AT4	Non Physicians are not permitted/allowed to question my professional judgment (Lichtenstein 1984).
AT5	Make changes in the ways work is carried out (Lichtenstein 1984).
AT6	My present position doesn't require reporting my activities to non physicians/non practicing physicians (Lichtenstein 1984).
AT7	My present position doesn't involve receiving instructions from non physicians/non practicing physicians (Lichtenstein 1984).
	<i>Relationship with Co-workers (Doctors and Physicians only)</i>
RCO1	I am at ease in discussing difficult cases with co-workers (Lichtenstein 1984; Stamps and Cruz 1994; Konrad et al. 1998).
RCO2	I am at ease in communicating with physicians with whom I share patients (Lichtenstein 1984; Stamps and Cruz 1994; Konrad et al. 1998).
RCO3	I am treated with respect in the local medical community (Konrad et al. 1998).
RCO4	I share harmonious relations with my co-workers (Ozaki et al. 2008).
RCO5	My co-workers support me in maintaining work family balance (Stamps and Cruz 1994; Konrad et al. 1998; Ozaki et al. 2008).
	<i>Relationships with Staff</i>
RS1	There is an atmosphere of mutual help and support (Konrad et al. 1998; Cooper et al. 1987).
RS2	People in administration are respected.
RS3	I am treated with respect by the non physician staff.
RS4	I share harmonious relations with non physician staff (Konrad et al. 1998).
RS5	My non physician staff supports me in maintaining work family balance (Konrad et al. 1998).
RS6	My staff provides me with professional stimulation (Konrad et al. 1998; Williams et al 1999; Ozaki et al. 2008).
RS7	Non-physicians are supportive and accommodating (Konrad et al 1998; Williams et al 1999; Ozaki et al. 2008).
	<i>Relationships with Patients</i>
RP1	Non Compliance by patients is not a major irritant (Konrad et al. 1998).
RP2	As and when my patients need me I am easily accessible (Konrad et al. 1998).
RP3	I am not frequently exposed to physical reprisal from the patients/their relatives (Lichtenstein 1984).
RP4	Sufficient time is available for developing cordial relationships with the patients (Konrad et al. 1998; Ozaki et al. 2008).
RP5	I face no problem in relating with patients (Shuggars et al. 1991).
RP6	I consider my relationships with patients very satisfying (Shuggars et al. 1991).
RP7	I enjoy interacting with patients (Shuggars et al. 1991).
	<i>Delivery of Care/Intrinsic Factors</i>
DOC1	I am able to practice the way I want to (McGlynn 1988).
DOC2	In my absence, my patients will not get the care they need (Konrad et al. 1998).
DOC3	I am able to use full range of my skills in my practice (McGlynn 1988; Konrad et al. 1998).
DOC4	Diagnostic and treatment planning are the most satisfying components of my job Shuggars 1991).
DOC5	I am extremely pleased with the technical quality of my work (McGlynn 1988).
DOC6	What I do daily makes a difference in my patients' lives (Konrad et al. 1998).
DOC7	My job provides me with enough intellectual stimulation (Konrad et al. 1998).
DOC8	Expression of gratitude by my patients keeps me going (Konrad et al. 1998; Williams et al. 1999).
DOC9	I believe I am having a positive impact on needy population (Konrad et al. 1998).
	<i>Relationships with Community</i>
RC1	I have a sense of belonging for the community where I work (Konrad et al. 1998; Williams et al. 1999; Ozaki et al. 2008).

Table 1: Contd..

<i>Item code</i>	<i>Facet satisfaction – Item pool</i>
RC2	Me and my family are strongly linked with the community where I work (Konrad et al 1998; Williams et al. 1999; Ozaki et al. 2008).
RC3	My community where I work respects me (Lichtenstein 1984; Konrad et al. 1998).
RC4	My community provides adequate opportunities for me (Lichtenstein 1984; Konrad et al. 1998).
	<i>Pay/Remuneration/Earnings</i>
ER1	My earning is sufficient to provide for my family and education for my children (Koslowsky, Bailit, Valluzzo 1974; Konrad et al 1998).
ER2	My present earning ensures bright prospects for future financial security (Konrad et al. 1998).
ER3	I perceive, the compensation I receive as fair (Stamps and Cruz 1984; Konrad et al. 1998, Williams et al. 1999; Komatsu 2006; Ozaki et al. 2008).
ER4	Competition among doctors is not a threat to my financial future (Konrad et al. 1998).
ER5	As compared to physicians from other specialties, I am well compensated (Shuggars 1991; Konrad et al. 1998; Williams et al. 1999; Ozaki et al. 2008).
	<i>Administration</i>
AD1	Administrators are available to handle administration related problems (Lichtenstein 1984).
AD2	Vacant positions are filled within 2 months (Lichtenstein 1984).
AD3	Supervision takes up very small proportion of my time (Konrad et al. 1998).
AD4	Administrative work is not a burden on me (Konrad et al. 1998).
	<i>Resources</i>
R1	I have sufficient nurses, aides or technicians to perform the requisite functions (Lichtenstein 1984).
R2	I can confidently delegate specific clinical tasks to nurse practitioners, physicians' assistants (Lichtenstein 1984).
R3	I have sufficient numbers of secretaries or clerks available for clerical tasks (Lichtenstein 1984).
R4	Pharmaceutical supplies are available when I need them (Lichtenstein 1984, Konrad et al. 1998; Williams et al. 1999).
R5	Other supplies I need are readily available (Lichtenstein 1984).
R6	Examination room equipment is in working order (Lichtenstein 1984; Konrad et al. 1998; Williams et al. 1999).
R7	Emergency equipment is ready to use (Lichtenstein 1984).
R8	Sufficient space is available to examine the patients (Lichtenstein 1984; Konrad et al. 1998; Williams et al. 1999).
R9	Funds for making improvements are available (Lichtenstein 1984).
R10	I can delegate routine clinical tasks (BP measurement, pulse rate temperatures etc.) to nurses (Lichtenstein 1984).
R11	Adequate equipment is available to carry out my work smoothly (Lichtenstein 1984).
R12	Patients have adequate access to requisite social services (Stamps and Cruz 1994; Konrad et al. 1998).
	<i>Personal Time</i>
PT1	Sufficient time is available to me for my personal life (Koslowsky et al. 1974; Williams et al. 1999).
PT2	Sufficient time is available to me for leisure activities (Koslowsky et al. 1974).
PT3	I do not feel rushed by the pace of my work (Konrad et al. 1998).
PT4	Sufficient time is available to me for my family (Konrad et al. 1998).
	<i>Spirituality</i>
S1	My profession makes me believe that I am a chosen instrument of a divine or higher power destined to facilitate healing in the lives of sufferers (Komala and Ganesh 2007).
S2	My profession gives me a feeling of being authentic, an awareness of alignment between my values and beliefs and my work and a belief that I am engaged in meaningful work that has a higher purpose (Komala and Ganesh 2007).
S3	My profession gives a feeling of spiritual presence characterized by a sense of connection to something larger than self, such as higher power (Komala and Ganesh 2007).

In addition to these, facet 'relationship with patients' along with its constituent items was completely removed on account of low reliability

(.322). The reliability of the facet satisfaction scale after ignoring the superfluous items as discussed above was found to be 0.918.

Table 1a: Initial item pool (Global Satisfaction)

<i>Item Code</i>	<i>Global satisfaction – Item pool</i>
	<i>Job Satisfaction</i>
JS1	Overall I am satisfied with my work (Stamps and Cruz 1994; Konrad et al. 1998; Ozaki et al. 2008).
JS2	Knowing what I know now, I would, without any hesitation choose the same position if I had to decide all over again (Cooper et al. 1987; Konrad et al. 1998).
JS3	The position I am in measures up to the sort of position I had aspired (Konrad et al. 1998).
	<i>Specialty Satisfaction</i>
SS1	My specialty provides me with adequate the job security as it once did (Konrad et al. 1998).
SS2	Practice in my specialty has the same appeal to me as it used to have earlier (Konrad et al. 1998).
SS3	In general practice in [clinical] specialty has measured up to my expectations (Konrad et al. 1998).
SS4	If I were to start my career again, I would choose my current specialty (Konrad et al. 1998).
SS5	I would recommend my specialty to a physician student seeking career advice (Konrad et al. 1998).
SS6	I cannot imagine myself practicing in a different clinical specialty (Konrad et al. 1998).
	<i>Career Satisfaction</i>
CS1	I stay in medicine because I want to (not because there is no easy way for me to move to another type of work) (Stamps and Cruz 1994; Konrad et al. 1998).
CS2	My career in medicine is appealing to me now as when I started (Konrad et al. 1998).
CS3	If, I were to choose over again I would still become a physician/doctor (Stamps and Cruz 1984; Cooper et al. 1987; Konrad et al. 1998).
CS4	All things considered I am satisfied with my career as a physician (Shuggars et al. 1991; Konrad et al. 1998; Ozaki et al. 2008).
CS5	In general, my medicine career has measured up to my expectations (Konrad et al. 1998; Ozaki et al. 2008).
CS6	I would recommend medicine as a career to others (Shuggars et al. 1991; Konrad et al. 1998).

Overall Job Satisfaction

Overall job satisfaction on the basis of previous research was classified into job satisfaction, specialty satisfaction and career satisfaction. The reliability analysis of the items constituting these factors was carried out in a manner similar to the reliability analysis of the different facets of job satisfaction.

Job Satisfaction

The factor job satisfaction was proposed to be composed of three items and reliability analysis of the scale gave Cronbach's alpha equal to 0.925 (Table 4). Item-total statistic confirmed significant item total correlation among the items of the scale.

Specialty Satisfaction

This parameter attempts to measure satisfaction of the physicians with their specialty. The factor comprised of six items. Cronbach's alpha for these items was found to be 0.544 (Ta-

ble 4), item-total statistic indicated no further improvement in reliability with removal of item/ items from the scale. It was decided to drop this factor along with the constituting items from the scale.

Career Satisfaction

While job satisfaction attempts to measure the satisfaction of the incumbent in the present position/job, career satisfaction intends to measure and evaluate the satisfaction of the individual with the progression of his/her career. Cronbach's alpha depicting the reliability of the scale in this case was 0.812 item-total statistics indicate possibility of further improvement in reliability by ignoring item CS 1 having very low inter-item correlation (-0.038). It was therefore decided to drop the item CS 1 from the scale. Reliability of the scale increased to 0.908 (Table 4)

Reliability of the scale for estimating overall satisfaction as depicted by job satisfaction and career satisfaction was 0.934.

The proposed Indian Physician Job Satisfaction Scale after pilot study comprised of for-

Table 2: Pre-pilot frequency distribution for physician job satisfaction factors

<i>Factor</i>	<i>Rating</i>	<i>Frequency</i>	<i>Percent</i>	<i>Valid percent</i>	<i>Cumulative percent</i>
<i>Autonomy</i>	12	2	3.8	3.8	3.8
	3	3	5.8	5.8	9.6
	4	28	53.8	53.8	63.5
	5	19	36.5	36.5	100.0
	Total	52	100.0	100.0	
<i>RCO</i>	2	2	3.8	3.8	3.8
	3	5	9.6	9.6	13.5
	4	26	50.0	50.0	63.5
	5	19	36.5	36.5	100.0
	Total	52	100.0	100.0	
<i>RS</i>	2	2	3.8	3.8	3.8
	3	4	7.7	7.7	11.5
	4	22	42.3	42.3	53.8
	5	24	46.2	46.2	100.0
	Total	52	100.0	100.0	
<i>RP</i>	2	3	5.8	5.8	5.8
	3	5	9.6	9.6	15.4
	4	33	63.5	63.5	78.8
	5	11	21.2	21.2	100.0
	Total	52	100.0	100.0	
<i>DoC</i>	3	3	5.8	5.8	5.8
	4	20	38.5	38.5	44.2
	5	29	55.8	55.8	100.0
	Total	52	100.0	100.0	
<i>RC</i>	1	1	1.9	1.9	1.9
	2	1	1.9	1.9	3.8
	3	4	7.7	7.7	11.5
	4	26	50.0	50.0	61.5
	5	20	38.5	38.5	100.0
<i>Rem</i>	Total	52	100.0	100.0	
	1	1	1.9	1.9	1.9
	2	1	1.9	1.9	3.8
	3	4	7.7	7.7	11.5
	4	24	46.2	46.2	57.7
<i>Admn</i>	5	22	42.3	42.3	100.0
	Total	52	100.0	100.0	
	1	17	32.7	32.7	32.7
	2	32	61.5	61.5	94.2
	3	2	3.8	3.8	98.1
<i>Res</i>	4	1	1.9	1.9	100.0
	Total	52	100.0	100.0	
	2	1	1.9	1.9	1.9
	3	4	7.7	7.7	9.6
	4	21	40.4	40.4	50.0
<i>PT</i>	5	26	50.0	50.0	100.0
	Total	52	100.0	100.0	
	2	3	5.8	5.8	5.8
	3	5	9.6	9.6	15.4
	4	24	46.2	46.2	61.5
<i>Spirituality</i>	5	20	38.5	38.5	100.0
	Total	52	100.0	100.0	
	1	26	50.0	50.0	50.0
	2	21	40.4	40.4	90.4
	3	3	5.8	5.8	96.2
	4	2	3.8	3.8	100.0

ty- eight items representing eight facets of satisfaction and eight items corresponding to two global satisfaction measures. The Cronbach's

alpha for the scale was .931. Summary of Cronbach's alpha for all the facets and global measures is presented in Tables 3 and 4.

Table 3: Summary of the Cronbach's alpha for various facets of job satisfaction scale

<i>Factor</i>	<i>Reliability (pilot study)</i>	<i>Remarks</i>
Autonomy	0.621	One item deleted
Relationship with co-workers (Doctors and Physicians only)	.820	
Relationships with staff	0.860	1 item deleted
Relationships with patients	0.322	Deleted from the scale
Delivery of care/Intrinsic factors	0.802	
Relationships with community	0.866	
Pay/Remuneration*	0.917	Included, two items deleted.
Resources	0.895	
Personal time	0.905	1 item deleted

Table 4: Summary of Cronbach's alpha for Overall job satisfaction measure

	<i>Reliability (pilot study)</i>	<i>Remarks</i>
Job satisfaction	0.925	
Specialty satisfaction	0.544	Deleted from the scale
Career satisfaction	0.908	1 item deleted

Validation

The validation of the scale was carried out on the basis of data collected from 500 doctors [males 331 (66.2 %), females 169 (33.8%); having own hospital 70 (14%), employed in Government hospital 201 (40.2), employed in private hospital 229 (45.8); post graduates 468 (93.6), doctorate 32 (6.4%); experience 0 to less than 3 years 151 (30.2%), 3 to less than 6 years 116 (23.2%), experience 6 years and above 233 (46.6%); time in current position 0 to less than 3 years 225 (45%), time in current position 3 years to less than 6 years 95 (19%), time in current position 6 years and above 180 (36 %); gynecologists 71 (14.2%), pediatrics 66 (13.2%), medicine 217 (43.4%), general surgery 87 (17.4%) and orthopedics 59 (11.8%); over a period of ten months. Questionnaire was distributed and collected personally as well as through email.

Factor Analysis

Facet Satisfaction

The KMO measure of the sampling adequacy was 0.719 and the Bartlett's test of sphericity was less than 0.001, which were acceptable (Kaiser 1974). 55 item measure (representing eight satisfaction facets and two global satisfaction measures) obtained on the basis of pre-pilot and pilot study was subjected to FA with varimax

rotation to reconfirm the distribution of items and to ensure that there was no cross loading.

The FA results (Table 5) with 48 items produced an eight factor solution indicating some rearrangement of the items with respect to the pilot study (Table 5). Factor loading of 0.4 was considered as adequate. All the items corresponding to facets autonomy (factor 5), relationship with co-workers (factor 1), relationship with community (factor 8), employee remuneration (factor 7) and personal time (factor 4) loaded satisfactorily on their respective factors. While items (i) RS7 (Non-physicians are supportive and accommodating) having cross loading between factor 1 (relationship with co-workers) and factor 3 (delivery of care), (ii) item R2 (I can confidently delegate specific clinical tasks to nurse practitioners, physicians' assistants) having cross loading between factor 1 (relationship with co-workers) and factor 2 (resources), (iii) DOC1 (I am able to practice the way I want to.) having cross loading between factor 3 (delivery of care) and factor 5 (autonomy) and (iv) DOC3 (I am able to use full range of my skills in my practice) again having cross loading between factor 3 (delivery of care) and factor 5 (autonomy) were deleted from the scale.

However, item DOC4 (Diagnostic and treatment planning are the most satisfying components of my job) having cross loading between factor 1 (relationship with co-workers) and factor 5 (autonomy) had very high loading with

Table 5: Validation using EFA - Rotated Component Matrixa

	<i>Component</i>							
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>
AT1	.186	.262	.118	.149	.681	.101	.100	-.052
AT2	.315	.296	-.068	.293	.613	.070	.202	.011
AT3	.241	.175	.043	.070	.411	-.284	-.172	.227
AT5	-.001	.128	.122	-.083	.758	.019	.183	.109
AT6	-.040	.059	-.127	.165	.154	.017	-.009	.802
AT7	-.166	.081	-.072	-.008	-.166	-.035	.161	.833
RCO1	.717	-.051	.007	-.098	.264	-.051	-.098	-.069
RCO2	.683	.014	.082	-.144	.171	.069	-.097	-.021
RCO3	.708	-.009	.377	.010	.082	-.053	.092	-.074
RCO4	.679	.084	.269	-.014	-.121	.069	.089	.195
RCO5	.647	-.023	.201	.097	.007	.017	.226	-.037
RS1	.035	.035	.260	-.023	.003	.099	.718	-.171
RS2	.045	.245	.100	.193	.267	.202	.482	-.077
RS3	.175	.114	.357	-.012	.034	.012	.716	-.022
RS4	.318	-.001	.295	.082	.078	.062	.715	.042
RS5	.387	-.023	.213	.011	.092	.026	.726	.011
RS6	.130	-.033	.239	-.006	.081	.140	.791	.051
RS7	.452	-.055	.409	.147	.110	.103	.286	.054
DOC1	.156	.053	.514	.190	.505	.114	-.020	-.190
DOC2	-.020	-.077	.605	-.071	.324	.198	-.301	.065
DOC3	.209	.221	.441	.029	.539	.118	-.158	-.137
DOC4	.501	.175	.271	.014	.413	.000	-.157	-.174
DOC5	.400	.094	.702	-.107	.267	-.043	-.027	-.080
DOC6	.173	.053	.674	-.010	.092	.155	.207	-.142
DOC7	.052	-.232	.423	-.204	-.016	-.054	-.337	.056
DOC8	.154	.038	.779	-.049	.019	.020	-.047	.038
DOC9	.317	-.006	.760	.042	.004	.116	.079	.089
RC1	.427	.003	.068	.196	-.082	.252	.256	.607
RC2	.161	.044	-.107	.111	.067	.176	.129	.581
RC3	.381	.103	.050	.102	.025	.176	.234	.622
RC4	.217	.124	-.027	.169	.164	.270	.392	.478
ER1	.131	.168	.384	.166	-.041	.745	.109	.007
ER2	.100	.180	.243	.216	-.029	.776	.159	-.057
ER3	.130	.194	.186	.372	.012	.633	.169	-.028
R1	-.084	.648	.146	.233	.098	-.272	-.108	-.097
R2	.406	.402	-.014	.336	-.136	.014	-.022	-.141
R3	-.025	.614	-.111	.386	.076	-.112	-.108	.096
R4	.174	.806	.032	.021	-.050	.143	.051	-.166
R5	.064	.817	-.156	.044	-.006	.128	.021	-.216
R6	.182	.758	.103	-.042	.166	.300	-.128	.015
R7	.061	.721	.092	-.135	.199	.008	.223	.113
R8	.091	.770	.157	.004	.129	.170	-.018	.069
R9	-.239	.698	.070	-.075	.235	.073	.243	.162
R10	.099	.459	.108	.385	-.070	-.456	-.148	.171
R11	-.047	.587	.095	.246	.295	-.095	-.106	.214
R12	-.054	.456	.261	.226	.289	-.153	.354	.180
PT1	-.031	.172	.075	.808	.083	-.036	.019	.156
PT2	-.060	.032	.074	.868	.089	.175	.065	-.028

factor 3 (delivery of care). Since, it was thought to be an important item by the researcher and was significantly well loaded on factor 1 therefore it was included as an item in factor 1 (relationship with co-workers).

Cronbach's alpha coefficients were 0.776 or higher for all the subscales, except autonomy which had Cronbach's alpha 0.639 (Table 6). DOC7 (My job provides me with enough intel-

lectual stimulation) had low item total correlation (.010) and therefore ignored after reliability analysis. All items passed the convergent and discriminant validity test.

Global Measures

Initial eight item global measure FA in the validation survey produced a two factor solu-

Table 6: Reliability of the subscales and global measures

<i>Subscales</i>	<i>No. of items in the subscale</i>	<i>Cronbach's alpha(pilot)</i>	<i>No. of items in the subscale</i>	<i>Cronbach's alpha (validation)</i>
AUT	6	.621	6	.639
RCO	5	.820	6 (DOC4)*	.822
RS [@]	6	.860	5	.818
DOC [#]	9	.802	5	.776
RC	4	.866	4	.860
ER	3	.917	3	.907
R [§]	12	.895	11	.897
P T	3	.905	3	.880
JS	3	.925	3	.894
CS	5	.908	5	.877

*originally included in 'Delivery of care' included in 'Relationship with co-workers after factor analysis.

@ RS7 excluded from the scale due to cross loading between factor 1 and factor 3

DOC1 & DOC3 excluded from the scale on account of cross loading after factor analysis. DOC7 had low item total correlation (.010) and therefore ignored after reliability analysis.

§R2 excluded from the scale due to cross loading.

tion (comprising of eight factors) that supported factor validity (Table 7). The global measures possessed excellent reliability (Table 6) and all passed the convergent and discriminant validity tests.

Table 7: Rotated Component Matrix^a – Overall satisfaction

	<i>Component</i>	
	<i>1</i>	<i>2</i>
JS1	.852	.294
JS2	.841	.395
JS3	.848	.185
CS2	.359	.541
CS3	.198	.913
CS4	.475	.752
CS5	.589	.629
CS6	.302	.833

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

DISCUSSION

Since, Indian Physician Satisfaction Scale (IPSS) draws items extensively from the previous studies carried out for measuring physician satisfaction, The measure overlaps with 10 factor measure proposed by Williams et al. (1999) and eight factor 28 item JHPSS proposed by Ozaki et al. (2008). 'Relationship with co-workers' and 'relationship with community' items in the proposed IPSS are similar to 'Relationship with other medical doctors' and 'Community'

from JHPSS. While the factor 'Resources', 'Relationship with staff', 'Delivery of Care', 'Remuneration', overlaps with that of Williams et al. (1999) ten factor measure. The factors 'relationship with staff' and 'resources' in turn are the reminiscent of the 'physician-nurse relationship' dimension of Stamps (1978) and 'resource' factor with Stamps and Cruz (1994). The factor 'Personal time' in IPSS is shared with 'time' factor of Williams et al. (1999) 10 factor scale and 'personal time' factor of Dentist Satisfaction scale proposed by Shuggars (1991). The factor 'autonomy' in the proposed scale is similar to 'self directed' and 'other directed' autonomy of Lichtenstein (1984) and 'autonomy' in Williams et al. (1999) ten factor scale. Although, the factor 'relationship with patients' is absent in scale proposed in this paper, certain items (What I do daily makes a difference in my patient's life, I believe I have a positive impact on needy population) included in the factor 'delivery of care' allude to relationship with patients.

Overall satisfaction measures – job satisfaction and career satisfaction proposed in this paper are similar to JHPSS's (Ozaki et al. 2008) and Williams et al. (1999) ten factor global job satisfaction and global career satisfaction measure. Item 'Career satisfaction' in the proposed scale also overlaps with Lichtenstein's (1984) 'status' concept. Some of the recent efforts that have been made (Day et al. 2013; Solberg et al. 2012) also draw majority of the items from Physician Worklife Survey.

While Lichtenstein (1984) used existing literature to develop his hypothesized thirty- three items and six scale measure, Stamps and Cruz (1994) used discussions with the physician, personal observation and literature to derive six facets and used small group of physicians for pilot testing. Ozaki et al. (2008) used focus group discussion, interviews, pilot study and validation study for finalizing their six subscales and two global measures with twenty items JHPSS. Williams et al. (1999) in their study also employed focus group discussion, pilot and validation studies for developing their 10-factor scale. This study like the preceding studies adopts a similar approach – review of literature for generating the initial item pool, followed by focus group discussions, pilot and validation study.

Although, these subscale reliabilities (range, 0.77 - 0.90; except autonomy 0.639) are better as compared to other studies – Lichtenstein's (1984) (range, 0.70 - 0.86), Stamps and Cruz's (1994) (range, 0.70 - 0.84), Williams et al.'s (1999) (range, 0.65 - 0.88), JHPSS's (2008) (range, 0.66 - 0.84). Literature suggests relationship with patients to be fairly significant predictors of physician job satisfaction, this factor had to be excluded from our scale on account of very low reliability, although low subscale reliability for 'relationship with patients' has also been reported by Williams et al. (1999) in their study and 'autonomy' as a factor was absent in JHPSS (Ozaki et al. 2008).

CONCLUSION

The study used conceptual framework based upon review of literature, pre-pilot, pilot and validation studies for developing the Indian Physician Satisfaction Scale (IPSS). The proposed scale is multidimensional in nature that measures physicians' satisfaction using eight subscales (forty three items) and two global measures (eight items). Given the lack of satisfaction measurement scales for Indian physicians, our findings, which confirm IPSS's reliability and validity are significant.

LIMITATIONS

Several constraints forced us to make compromises in the development process. These involved balancing the following:

1. Exhaustiveness for dimensions and items had to be sacrificed to compensate for the limited time available with the respondents.
2. Time and resources forced the study to be confined to North Western region of India, which may not represent the full diversity of the Indian physicians.
3. Study was confined to five specialties – orthopedics, surgery, medicine, pediatrics and gynecology the results as such cannot be generalized for other specialties.
4. Literature suggests relationship with patients to be a fairly significant predictor of physician job satisfaction this factor had to be excluded from our scale on account of very low reliability. Future development efforts should focus on expanding and refining these limitations and aim to be more exhaustive.

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