Self-Perceived Health Status and its association with Health Literacy among Youth in India

[1]Nupur Shandil, Research Associate, PGIMER, Chandigarh.

[2]Veena Kamath, Professor, Department of Community Medicine, Kasturba Medical College, Manipal, Manipal Academy of Higher Education.

[3]Sanjay Pattanshetty, Associate Professor, Department of Community Medicine, Kasturba Medical College, Manipal Manipal Academy of Higher Education.

[4]Mamta Gupta, Lead Epidemiologist, Department of Epidemiology & Biostatistics, Alchemist Research & Data Analysis, Chandigarh, India.

[5]Tejinder Pal Singh, Associate Professor, Director of Graduate studies, Division of Public Health, Department of Family and Preventive Medicine, School of Medicine, University of Utah.

Corresponding Author: Nupur Shandil, Research Associate, PGIMER, Chandigarh.

Abstract

Background: Health literacy (HL) entails comprehensive health literacy (CHL) and functional health literacy (FHL); a significant predictor of healthy behaviors and self-care actions. This study was planned to assess the levels of CHL, FHL and self-perceived health status (SHS) among Indian youth, and to explore its role in addition to other predictors of SHS.

Methods: This cross-sectional study was conducted among 572 college going students, 18 years and above, in Taluk Udupi of Karnataka in India. Study participants were selected following two-stage stratified cluster sampling. Self-administered questionnaire contained sections on socio-demographic characteristics, Swedish Functional Health Literacy scale for FHL, European Health Literacy Survey Questionnaire for CHL and NFHS-3 questionnaire captured data on SHS. Ordered logistic regression with cumulative logit was used to explore the predictors of SHS.

Results: The mean age of study participants was 19.66± 2.22 years, with female predominance of 60%. It was found that only 16.8% and 17.3% of college students had sufficient levels of CHL and FHL, respectively. About 28% respondents reported their self-perceived health status to be excellent. Female participants and the ones residing in urban areas were less likely to report their SHS as 'excellent' as compared to males [OR=0.33 (0.23-0.48)] and rural areas [OR=0.59 (0.39-0.90)]. The odds of students with sufficient CHL reporting excellent SHS were 1.2 times the odds of students having problematic or inadequate CHL [OR=1.2 (1.2-2.2)].

Conclusion: Majority of the college-going undergraduate students had inadequate levels of comprehensive and functional health literacy in Karnataka. Only 28% of the

Page 9

respondents assessed their self-perceived status to be excellent. Gender, household type (rural/ urban) and CHL were the main predictors of SHS. Health literacy needs to be integrated with health policy for promoting health and improving SHS.

Keywords: Health literacy, self-perceived health status, youth, India

Introduction

The term health literacy (HL) is gaining global recognition as a principal social determinant of health along with gender, education, income, race, and housing .[1] Health literacy implies the achievement of a level of knowledge, personal skills and confidence in order to take action to improve personal and community health by changing personal lifestyles and advocating for changes within their social networks. Thus, by improving people's access to health information and their capacity to use it effectively, health literacy is critical to empowerment of society.[2]

Conceptually, HL is of two types: 'Comprehensive Health Literacy' (CHL) and 'Functional Health Literacy' (FHL). CHL provides a holistic view of health literacy. It is defined as "literacy that entails people's knowledge, motivation and competencies to access, understand, appraise, and apply health information in order to make judgements and take decisions in everyday life concerning healthcare, disease prevention and health promotion to maintain or improve quality of life".[3, 4] On the other hand, FHL focuses on reading and writing skills related to health.[4, 5]

Therefore, the objective of HL is to empower an individual to understand the functioning and needs of the human body in health and disease. Importantly, assimilation of health information transfers into informed action improving overall health and well-being. This self-perception of an individual about their health, including both physical and psychological dimensions is referred to as self- perceived health status (SHS).[6] It is not only a measure of individual's health but an important indicator of quality of life, morbidity, mortality and utilization of health facilities..[7]As SHS is a qualitative indicator of health, and majorly relies upon one's perceptions; efforts have been made by social scientists to develop and validate tools for determining self-rated health.[8] Much of the studies have been conducted among elderly to assess their SHS and that too, in developed countries like Canada.[6] A report released by Organization for Economic Co-operation and Development (OECD) 2020 clearly indicates that SHS data was not available from most of the SEARO countries including India.[9]

Scattered evidence is available from India where a limited number of studies have measured SHS either among obese adults or among children diagnosed with specific learning disability.[10-12] A number of factors like gender, education, age, household income, perceived life stress, and presence of chronic conditions have been found to significantly affect SHS among specifically defined populations.[13, 14] Our literature review did not yield results of any study determining the factors which influence SHS among general population particularly among adolescents in India.

From the evidence presented so far, there is a likelihood of a linkage between HL and SHS. This is because HL help individuals to determine their own health status as good or bad which thus affects their treatment seeking behaviours and self-care actions.[15-17] Low levels of HL is associated with inaccurate self-perceived health status, and thus in-effective communication with clinicians and staff.[17-21] A gap in conclusive evidence exists in the literature to support this association of SHS with HL.

In the light of this, it can be stated that the fields of SHS and HL are abuzz with novel scientific developments, but

still in a nascent stage in India. We lack data on the levels of SHS and HL among Indian youth to guide our national and state policies and programs for improving health outcomes at a population level. [22] Therefore, the objective of this study was to assess the SHS, CHL and FHL among Indian college going youth. We also attempted to explore the predictors of SHS among this age group.

Materials and Methods

This community based cross-sectional study was conducted in Udupi Taluk of Karnataka, India among college going students from January 2015 till June 2015. Considering the poor SHS level among 40% of youth from studies conducted in Ireland and USA among adolescents [23, 24] and 95% confidence interval, with 5% margin of error and a design effect of 1.5, 572 college going students were enrolled by using a two-stage stratified cluster sampling method.

All undergraduate students of age ≥ 18 years, present on the day of the survey and willing to participate were included in the study. We obtained a list of all colleges from the Department of Higher Education and Colleges. The list contained a total of 19 undergraduate colleges in Udupi Taluk which were divided into three zones that is; North, Central and South zone representing three clusters. From each cluster, participants were selected into two stages that is, in the first stage the colleges were selected and in the second stage, classes were chosen. The colleges from each zone were selected using proportional probability sampling (PPS) as explained in Figure 1. Classes were chosen from the selected colleges based on simple random sampling, and further students were selected through PPS.

Self-administered questionnaire was used for data collection on basic socio-demographic characteristics of participants: Gender, social group, religion, household type, CHL, FHL and SHS. The operational definition of social group for this study pertained to caste system of India, where we have categorized it into two categories: General and reserved. Reserved group included participants belonging to scheduled caste, scheduled tribe and other backward class.

Current self-perceived health status (SHS) was measured using NFHS- 3 questionnaire.[25] The self-perceived health status was categorized as 'Poor', 'Fair/Good' and 'Excellent' as per NFHS-3 methodology. We used European Health Literacy Survey Questionnaire (HLS-EU-Q47) for assessing CHL. It is a pre validated questionnaire comprising of 47 questions seeking information on access to healthcare information, understanding and appraisal of information followed by application of that information for disease prevention.[26] The responses were recorded on a scale of 1 to 5 for each question with each level depicted as; 1-very difficult, 2-difficult, 3-easy, 4-very easy and 5-don't know. It was categorized as inadequate, problematic and sufficient. Responses 'Easy' and 'Very Easy' are put into one category, given the value of '1', 'Difficult' and 'Very difficult' valued as '0', 'Don't know' considered as missing. The sum score of the responses was divided into 3 categories: 13-16 score point taken as 'Sufficient' CHL, 9-12 points as problematic CHL, 0-8 points as Inadequate CHL.[27]

The Swedish Functional Health Literacy scale (S-FHL) questionnaire consisted of four questions to assess how difficult it is for a person to take in information related to health, illness and medical care. The response for each question was recorded on a scale of 1 to 5, wherein '1' is for 'never' and '5'is for 'always'. It was also categorized as inadequate, problematic and sufficient.[27]. 'Never' and 'Seldom' responses were combined into Sufficient,

'Sometimes' as Problematic. 'Often and Always' into Inadequate. Participants having responses 'never' and 'seldom' to all items were categorized into sufficient FHL, 'often' and 'always' to one or more of the four items classified into inadequate FHL, participants who responded not "often" or "always" to any items and "some- times" to at least one item into problematic FHL. The questionnaires to measure CHL and FHL were translated into Kannada by a translator, and then reviewed by a bilingual group of researchers. The tools were back translated into English and finally adopted for collecting data. Pretesting of the tools was done on 20 participants to appropriately modify the questionnaire. The voluntary and written informed consent was obtained from the participants after explaining the purpose of the study. Ethical clearance for the study was obtained from the Manipal ethics committee and from the colleges where the study was undertaken.

Data was entered and analyzed using statistical software SPSS version 15 (SPSS Inc., Chicago, IL). The frequencies and percentages were tabulated for socio-demographic characteristics, levels of FHL and CHL along with self-perceived health status of the respondents. Chi-square test of significance was used to test the associations between socio-demographic characteristics, FHL, CHL and SHS.

Ordered logistic regression (OLR) with cumulative logit was used to determine the effects of various independent factors on an individual's evaluation of SHS in terms of odds ratio (95%CI). The factors included in the model were age, gender, household type, religion, comprehensive and functional health literacy levels of the students based on the p-value of <0.2 derived from the bivariate analysis. The p-value of the OLR model at < 0.05 demonstrated that the model was robust. The odds ratios reflect the multiplicative change in the odds of higher on the dependent variable for every one-unit change in independent variables, holding the remaining independent variables constant.

Results

A total of 572 college going students were included in the study. Mean age of the participants was 19.66 (SD=2.12) years with a majority of female students (n= 543, 59.97%). Majority of the participants followed Hindu religion (n=395, 69%) and belonged to reserved social groups (n=303, 53%). It was found that 37% participants had inadequate while 45.6% students had problematic FHL and only 17.3% reported to have sufficient FHL. There were 24.3% students who had reported inadequate CHL, 58.92% had problematic, and only 16.78% had sufficient CHL. Overall, 27.9% students declared their health status to be excellent, 67.13% to be 'Fair/Good', and 4.8% as poor. (Table 1) Bivariate analysis revealed that gender, household type and CHL were significantly associated with self-perceived health status (p<0.05). (Table 1).

Ordered multivariate logistic regression with cumulative logit was used to determine the effects of various independent factors (age, gender, household type, religion, comprehensive and functional health literacy levels) on an individual's evaluation of SHS. (Table 2)

It was found that gender, household type and CHL were significant predictors of self-perceived health status. (Table 2). The results revealed that female participants were less likely to report their SHS as 'Excellent' as compared to males [OR=0.33 (0.23-0.48)]. Similarly, the odds of reporting SHS as 'Excellent' and 'Fair/Good' versus 'Poor' is 0.33 times lower among female students given all other variables were held constant.

Students from urban background were 0.59 odds less likely to report SHS level as 'Excellent' as compared to rural areas [OR=0.59 (0.39-0.90)]. Likewise, students

belonging to urban households have 0.59 times lower odds to report as combined 'Excellent' and 'Fair/Good' SHS compared to 'Poor' when all other factors are held constant. The odds of students reporting excellent self-perceived health status was 1.2 times the odds of students who reported SHS as problematic. Similarly, the odds of students reporting fair/good self- perceived health status was 1.2 times the odds of students who reported SHS as poor [OR=1.2 (1.22-2.18)]. Age, religion, social group and functional health literacy were found to have no significant effect on student's response on SHS.

Discussion

This study aimed to assess the prevalence of health literacy and self-perceived health status among college going undergraduate students of Udupi Taluk of Karnataka in India. We also attempted to evaluate factors affecting SHS so that determinants of health can be better understood among youth.

The mean age of 572 study participants was 19.66± 2.22 years, with female predominance of 60%. It was found that only 16.8% and 17.3% of college students had sufficient levels of CHL and FHL, respectively. The results were consistent with a study carried out at tertiary health care setting in coastal Karnataka, where 23% of respondents had sufficient level of FHL.[21] A study by Wångdahl et al conducted among respondents aged more than 18 years reported that only 27.5% and 21% respondents had sufficient level of CHL and FHL, respectively.[28] A study performed in Ghana among street youth established that the majority of the participants had problematic general health literacy(GHL) (52%) and only 22% had sufficient GHL which is comparable to findings from the current study.[29] Another cross-sectional study in Iran reported 31.7% of adults with adequate HL level.[17]

In contrary to our study, a much higher proportion of participants (55.8%) reported adequate HL in Germany and Greece.[30, 31]

A study from Spain in general population also demonstrated very high prevalence (84.6%) of sufficient HL.[32] This difference might be explained as health systems in developed countries have already incorporated HL in their policies, leading to high prevalence of HL.[33] However, health system in India lacks comprehensive initiatives for promotion of HL in the absence of adequate evidence.[34]

Additionally, there is evidence that education is linked to improved level of HL.[35, 36] Albeit, considering the participants of our study which comprised of college going undergraduate students, we can suggest that attaining higher education does not essentially translate into being health literate. This reiterates the need to have a health policy which incorporates HL so that people can understand their health needs, assimilate information and process it to serve the purpose of enhanced functional capacity of taking action.

This study also intended to explore the relationship between self-perceived health status and HL. A significant association was observed between CHL and SHS in this study, which is in line with a study on adult population depicted that veterans with good or adequate HL level perceived their health status to be better than those with poor or inadequate HL.[7] Similar finding of significant association between HL and SHS was observed in studies conducted worldwide in adults as well [37]

However, there was no significant association observed between current perceived health status and sufficient level of FHL. Similar results were seen in the study undertaken in Philadelphia among Latinos and African American adults, where perceived physical or mental

Page13

health status were not associated with FHL.[38] Likewise, similar non-significant association was observed among university students of Greece.[31] Therefore, current study strengthens the evidence that poor FHL cannot standalone be associated with poor perceived health status. Also, for improving the HL, focus should not involve only reading and writing skills related to health, but improving it comprehensively.

We found that other social factors like gender and household type were significantly associated with SHS. Students residing in rural households had higher odds of reporting SHS to excellent as compared to urban households. It was observed that females were less likely to report their health status as good or excellent as compared to males. In contrast to this finding, a study on Canadian adults >40 years of age did not show any significant association between gender and SHS.[6] But this may be due to difference in age groups of representing populations.

We could find only one hospital-based study from India by Rathnakar et al which reported the HL among 200 adults aged 25-45 years, lacking generalizability and with small sample size.[21]

This present study is seminal to India, exploring the HL level and SHS among educated youth using validated questionnaires. It is a community based observational study with a large sample size which has also explored the predictors for SHS. Youth age group is very important from planning point of view because interventions targeting to increase CHL and FHL can be easily instituted through schools and colleges, which in turn can lead to better understanding of one's health for better quality of life.

This study is not without limitations. As this was purely a quantitative study, we could not find reasons for differences in perceived health status among males and females, and students belonging to rural-urban households. It is a common understanding that people belonging to urban areas have better education and health facilities. Then why the perception of wellness is among them is less than the people residing in rural areas needs to be explored.

This clearly indicates that there are many more factors influencing SHS, besides gender and residential status, to be investigated as well as addressed for improving both HL and SHS. Another limitation of this study was the assessment of self-reported health status thus, subjective potentially leading to information bias. More objective parameters should be used in future studies to capture SHS.

Based on the findings of this study and literature review, we recommend that sufficiently powered community based longitudinal studies should be carried with mixed method research to understand concept of HL and SHS. Psychological aspect of health needs to be addressed along with physical health for better understanding. Another recommendation is the need for integrating HL with the existing health policy, so that program planning can be done effectively by addressing community needs.

Conclusion

The prevalence of sufficient CHL and FHL was found to be 16.7% and 17.3% among college going undergraduate students of Taluk Udupi in Karnataka. Only 28% students reported to have excellent self-perceived health status. Gender, household type and CHL were found to be significant predictors of self-perceived health status. For raising the health literacy and thereby, improving the self-assessment of perceived health status, CHL needs to be integrated with health policy.
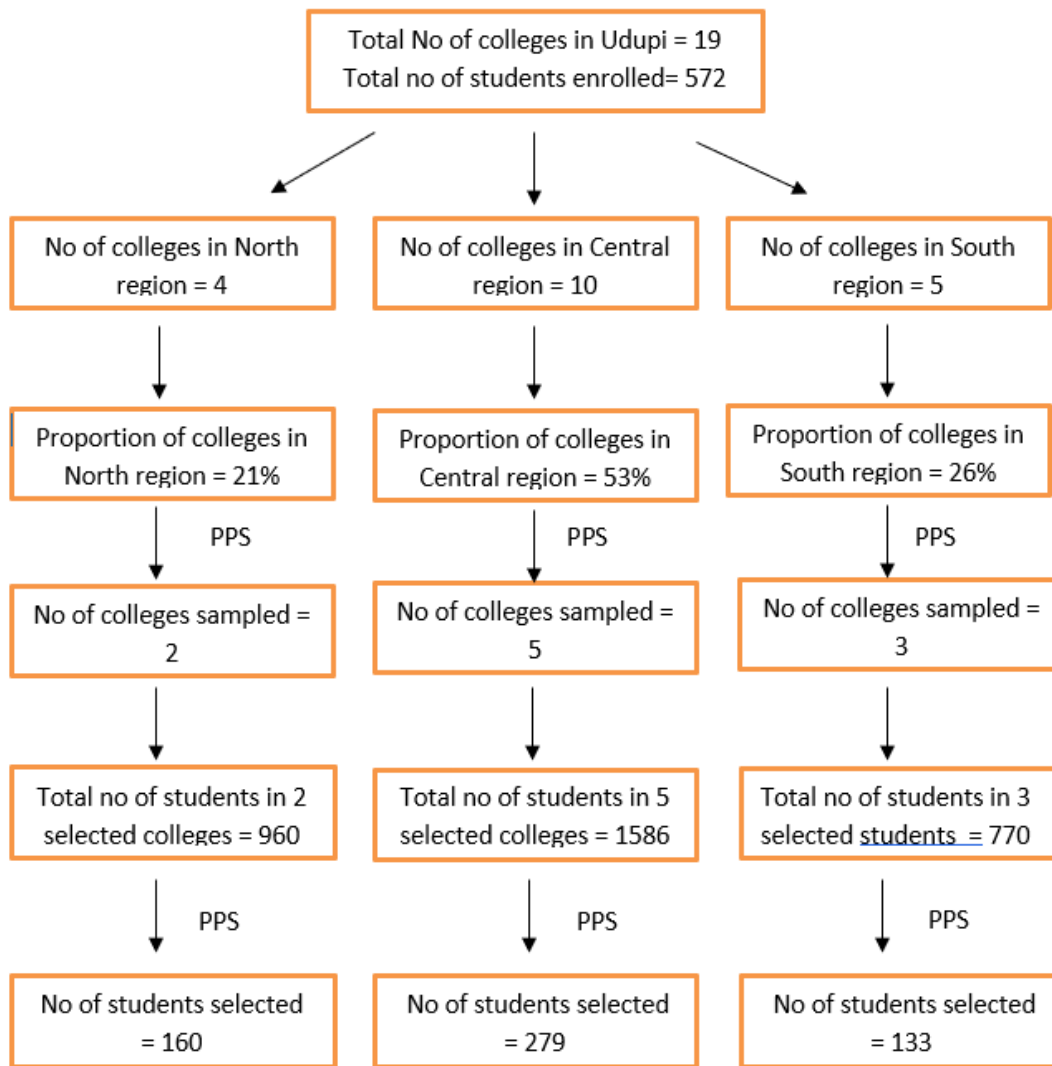
Figure 1: Sampling Technique

Table 1: Population statistics for Self- Reported Health Status among college students in Udupi Karnataka, India (N=572)

Characteristics	Overall (N=572) n (%)	Self-Reported Health Status			p-value
		Poor N=28n (%)	Fair/Good N=384 n (%)	Excellent N=160 n (%)	
Age Mean (SD)	19.66 (±2.12)	19.46 (±2.13)	19.80 (±2.16)	19.33 (±1.98)	0.057
Gender					
Females	343 (59.97)	18 (64.29)	265 (69.01)	60 (37.5)	<0.001
Males	229 (40.03)	10 (35.71)	119 (30.99)	100 (62.5)	
Social Groups					
General	269 (47.03)	13 (46.43)	180 (46.88)	76 (47.5)	0.989
Reserved	303 (52.97)	15 (53.57)	204 (53.12)	84 (52.5)	
Religion					
Hindus	395 (69.06)	16 (57.14)	263 (68.49)	116 (72.5)	0.2

Others	177 (30.94)	12 (42.86)	121 (31.51)	44 (27.5)	
Household Type					
Urban	141 (24.65)	8 (28.57)	81 (21.09)	52 (32.5)	0.017
Rural	434 (75.35)	20 (71.43)	303 (78.91)	108 (67.5)	
Functional Health Literacy					
Inadequate	212 (37.06)	12 (42.86)	152 (39.58)	48 (30)	0.15
Problematic	261 (45.63)	14 (50)	168 (43.75)	79 (49.38)	
Sufficient	99 (17.31)	2 (7.14)	64 (16.67)	33 (20.62)	
Comprehensive Health Literacy					
Inadequate	139 (24.3)	8 (28.57)	107 (27.86)	24(15)	<0.001
Problematic	337 (58.92)	16 (57.14)	229 (59.64)	92 (57.5)	
Sufficient	96 (16.78)	4 (14.29)	48 (12.5)	44 (27.5)	

*chi-square value taken as ≤0.2 considered as significant

Table 2: Ordered Logistic Regression Analysis with cumulative logit of self-reported Health Status (N=572)

Independent Factors	B	Odds Ratio	Lower CI	Upper CI	p-value
Age (Ref- 19 and below)	-0.083	0.920	0.838	1.009	0.079
Sex (Ref- Male)	-1.09	0.336	0.231	0.489	<0.001
Household type (Ref- Rural)	-0.518	0.596	0.390	0.909	0.016
Religion (Ref- Hindu)	-0.245	1.634	0.526	1.161	0.224
Functional Health Literacy (Ref- Inadequate)	0.189	1.152	0.933	1.566	0.151
Comprehensive Health Literacy (Ref- Inadequate)	0.491	1.209	1.221	2.185	0.001

References

1. Rowlands G, Shaw A, Jaswal S, Smith S, Harpham T. Health literacy and the social determinants of health: a qualitative model from adult learners. Health Promotion International. 2015;32(1):130-8.

2. World Health Organization. Health Promotion [Internet]. 2020 [Available from: https:/ /www. who. int/ health promotion/health-literacy/en/.

3. Sørensen K, Van den Broucke S, Fullam J, Doyle G, Pelikan J, Slonska Z, et al. Health literacy and public health: a systematic review and integration of definitions and models. BMC public health. 2012;12:80-.

4. Evans AY, Anthony E, Gabriel G. Comprehensive Health Literacy Among Undergraduates: A Ghanaian University-Based Cross-Sectional Study. HLRP: Health Literacy Research and Practice. 2019;3(4):e227-e37.

5. Kobayashi LC, Wardle J, Wolf MS, von Wagner C. Aging and Functional Health Literacy: A Systematic Review and Meta-Analysis. The journals of gerontology Series B, Psychological sciences and social sciences. 2016;71(3):445-57.

6. Bonner WIA, Weiler R, Orisatoki R, Lu X, Andkhoie M, Ramsay D, et al. Determinants of self-perceived health for Canadians aged 40 and older and

policy implications. International Journal for Equity in Health. 2017;16(1):94.

7. Rasu R, Bawa W, Anna H, Sharma R, Stanke A, Burros S. Evaluation of Health Literacy in Veteran Affairs Outpatient Population: A Focus on Patient Self-Perceived Health Status. J Community Med Health Educ. 2018;8:613.

8. Cullati S, Mukhopadhyay S, Sieber S, Chakraborty A, Burton-Jeangros C. Is the single self-rated health item reliable in India? A construct validity study. BMJ global health. 2018;3(6).

9. Perceived Health Status. OECD Health Statistics 2020. June 2020. http:// www. oecd. org/ health/ health-data.htm.

10. Singh L, Arokiasamy P, Singh PK, Rai RK. Determinants of gender differences in self-rated health among older population: evidence from India. Sage Open. 2013; 3(2):2158244013487914.

11. Joena V, Pragasam AX. Relationship between self-rated health status and physical activity in obese South Indian patients. International Journal of Advances in Medicine. 2019;6(3):780.

12. Karande S, Venkataraman R. Self-perceived health-related quality of life of Indian children with specific learning disability. Journal of postgraduate medicine. 2012;58(4):246.

13. Saravia JC, Chau C. What factors are related to self-perceived health? The relationship between Sense of Coherence, behaviors and health on Peruvian emerging adults. Journal of Behavior, Health & Social Issues. 2017;9(2):111-6.

14. Paul P, Hakobyan M, Valtonen H. The association between self-perceived health status and satisfaction with healthcare services: Evidence from Armenia. BMC health services research. 2016;16(1):67.

15. Raeisi M, Mostafavi F, Hasanzade A, Sharifirad GR. The relationship between health literacy, health status and healthy behaviors among elderly in Isfahan. Iran J Health Syst Res. 2011;4:469-80.

16. Goto E, Ishikawa H, Nakayama K, Kiuchi T. Comprehensive Health Literacy and Health-Related Behaviors Within a General Japanese Population: Differences by Health Domains. Asia Pac J Public Health. 2018;30(8):717-26.

17. Moeini B, Rostami-Moez M, Besharati F, Faradmal J, Bashirian S. Adult Functional Health Literacy and its Related Factors: A Cross-Sectional Study. International Journal of Epidemiologic Research. 2019;6:24-9.

18. Kickbusch I, Wait S, Daniela M. Navigating health: The role of health literacy. European Public Health Centre Gastein Health Declaration. 2005:1-22.

19. Palumbo R, Annarumma C, Adinolfi P, Musella M, Piscopo G. The Italian Health Literacy Project: Insights from the assessment of health literacy skills in Italy. Health Policy. 2016;120(9):1087-94.

20. Protheroe J, Wolf M, Lee A. Health literacy and health outcomes. In Health Literacy in Context: International Perspectives: Nova Science Publishers; 2010. p. 57-74.

21. Rathnakar P, Belman M, Kamath A, Unnikrishnan B, Shenoy A, L U. Evaluation of Health Literacy Status Among Patients in a Tertiary Care Hospital in Coastal Karnataka, India. Journal of clinical and diagnostic research : JCDR. 2013;7:2551-4.

22. Rajan K, Kennedy J, King L. Is wealthier always healthier in poor countries? The health implications of income, inequality, poverty, and literacy in India. Soc Sci Med. 2013;88:98-107.

23. Foti K, Eaton D. Student Column: Associations of Selected Health Risk Behaviors with Self-Rated Health

Status among US High School Students. Public health reports. 2010;125(5):771-81.

24. McDaid O, Hanly MJ, Richardson K, Kee F, Kenny RA, Savva GM. The effect of multiple chronic conditions on self-rated health, disability and quality of life among the older populations of Northern Ireland and the Republic of Ireland: a comparison of two nationally representative cross-sectional surveys. BMJ open. 2013;3(6).

25. Government of India. National Family Health Survey-3. Mumbai: International Institute of Population Sciences; 2007.

26. Sørensen K, Van den Broucke S, Pelikan JM, Fullam J, Doyle G, Slonska Z, et al. Measuring health literacy in populations: illuminating the design and development process of the European Health Literacy Survey Questionnaire (HLS-EU-Q). BMC public health. 2013;13(1):948.

27. Wångdahl JM, Mårtensson LI. Measuring health literacy–the Swedish functional health literacy scale. Scandinavian journal of caring sciences. 2015;29(1):165-72.

28. Wångdahl J, Lytsy P, Mårtensson L, Westerling R. Health literacy and refugees' experiences of the health examination for asylum seekers – a Swedish cross-sectional study. BMC Public Health. 2015;15(1):1162.

29. Amoah PA, Phillips DR, Gyasi RM, Koduah AO, Edusei J. Health literacy and self-perceived health status among street youth in Kumasi, Ghana. Cogent Medicine. 2017;4(1):1275091.

30. Jordan S, Hoebel J. Health literacy of adults in Germany - Findings from the 'German Health Update', wave 2013–2014: Susanne Jordan. European Journal of Public Health. 2015;25(suppl_3).

31. Vozikis A, Drivas K, Milioris K. Health literacy among university students in Greece: determinants and association with self-perceived health, health behaviours and health risks. Archives of public health = Archives belges de sante publique. 2014;72(1):15-.

32. Garcia-Codina O, Juvinyà-Canal D, Amil-Bujan P, Bertran-Noguer C, González-Mestre MA, Masachs-Fatjo E, et al. Determinants of health literacy in the general population: results of the Catalan health survey. BMC Public Health. 2019;19(1):1122.

33. Obstetricians ACo, Gynecologists. ACOG Committee opinion no. 553: multifetal pregnancy reduction. Obstetrics and gynecology. 2013;121(2 Pt 1):405.

34. Health Education Library for People. Health Literacy in India: A Unique Challenge [Internet]. 2016 [Available from: https:// www. the best medical care. com/ decoding – medical – gobbleddy gook/ health-literacy-in-india.html.

35. Singh S, Acharya S, Kamath A, Ullal S, Urval R. Health Literacy Status and Understanding of the Prescription Instructions in Diabetic Patients. Journal of Diabetes Research. 2018;2018:1-5.

36. Subramanian S, Huijts T, Avendano M. Self-reported health assessments in the 2002 World Health Survey: how do they correlate with education? Bulletin of the World Health Organization. 2010;88:131-8.

37. Berens EM, Vogt D, Gille S, Schaeffer D. The role of self-efficacy in the association between health literacy and self-perceived health in Germany. European Journal of Public Health. 2018;28(suppl_4).

38. Guerra CE, Shea JA. Health literacy and perceived health status in Latinos and African Americans. Ethn Dis. 2007;17(2):305-12.