

## RESEARCH

## Open Access



# The relevance of educational attainments of parents of medical students for health workforce planning: data from Guiné-Bissau

Paulo Ferrinho<sup>1\*</sup> , Inês Fronteira<sup>1</sup>, Tiago Correia<sup>1</sup> and Clotilde Neves<sup>2</sup>

## Abstract

**Background:** In this article, we analyze data collected in the context of health workforce planning (HWFP) for Guiné-Bissau as part of the development of the third National Health Strategy, to study the relationship between educational achievement of parents and medical student characteristics and professional expectations.

**Methods:** Cross-sectional analytical study of all first-year medical students in Guiné-Bissau during December 2016.

**Results:** Our results confirm that the isolated effect of each parent is different as it is the combined education of both parents. Parental influence also seems to vary according to the sex of the offspring. The higher the education of the father, the stronger the urban background of the offspring. Level of education of parents is also important in relation to the decision to study medicine and the age of starting those studies. It is also an important influence as to expectation regarding place of future practice: the highest the educational level, particularly of the father, the highest the expectation for a future urban practice.

**Conclusions:** Our main interest in medical education is to study it as a health system intervention in order to contribute to health system's strengthening in fragile states. This is discussed in the context of two frameworks: the labor market framework and WHO's health system strengthening framework. Our data and that of others, recognize that household characteristics are important regarding future training and a future career in the health sector. This recognition should be integrated into HWFP frameworks.

**Keywords:** Guiné-Bissau health workforce planning, Level of education of parents, Medical students, Social reproduction of gender inequality

## Background

Education and its multiple effects in policies, institutions and behaviors has long been a topic of sociological inquiry [1, 2]. These inquiries have shown a positive link between socio-economic status (SES) and children's educational achievements [3, 4]. The literature further suggests a strong correlation between this mediation and

the education attained by parents as a clear sign of the processes of social reproduction [4, 6–21]. This is true for the most diverse cultural contexts and has been confirmed from studies in Africa [11, 22–26]. This influence extends to college attendance and academic success at university level [19, 27].

Some literature, sometimes conflicting, also differentiates between the influence of fathers and mothers, which resonates on broader issues of gender and parental roles [8, 13, 15, 20, 21, 28]. Furthermore, the exact mechanisms whereby the level of parental education influences their child's educational outcomes are not always clear. It has been argued on the basis of genetics, association

\*Correspondence: [pferrinho@ihmt.unl.pt](mailto:pferrinho@ihmt.unl.pt)

<sup>1</sup> Global Health and Tropical Medicine Research Center, Instituto de Higiene e Medicina Tropical, Universidade Nova de Lisboa, Rua da Junqueira 100, 1349 008 Alcantara, Lisbon, Portugal  
Full list of author information is available at the end of the article



© The Author(s) 2020. **Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>. The Creative Commons Public Domain Dedication waiver (<http://creativecommons.org/publicdomain/zero/1.0/>) applies to the data made available in this article, unless otherwise stated in a credit line to the data.

with level of material resources, support for school work, occupation of the parents, or the transmission of cultural capital, i.e., “the behaviors that are rewarded in the school environment” [8, 11].

Regardless of how these mechanisms operate in specific social groups and countries, the influence of parent’s educational background on students’ scholar performance is of importance in low-income countries in order to develop policies to tackle this issue.

In this article, we analyze data collected in the context of health workforce planning (HWFP) for Guiné-Bissau as part of the development of the third National Health Strategy [29], to study the relationship between educational achievement of parents and medical student characteristics and professional expectations.

**Methods**

A number of previous studies have been published about students attending the Cuba-supported Faculdade de Medicina Raúl Díaz-Argüelles García [30, 31]. In December 2016, in a context of HWFP and health strategy development, a censitary study [32] was done among the 108 first-year students attending the same faculty [33].

Besides collecting data on the variables studied in a previous survey, as reported elsewhere [30, 31], we also collected data on the level of education of the father and of the mother of each student. Data was recorded into three variables: education of the father and education of the mother with three categories each (parent did not complete secondary education; parent with complete secondary education; and parent with some level of complete post-secondary education) and combined parental education (one of the parents did not complete secondary education, one of the parents did not complete post-secondary education, both parents have some level of complete post-secondary education). No “complete secondary education” included not having any education, having complete or incomplete primary education or incomplete secondary education; no “complete post-secondary education” included complete secondary

education, incomplete or complete technical education or incomplete post-graduate university studies, incomplete BA or incomplete licenciatura. “Some level of complete post-secondary education” included complete post-graduate university studies, Ba, licenciatura, Master, or doctorate or incomplete master or incomplete doctorate.

Statistical analysis was carried out using IBM SPSS 25. The dependent variables were cross-tabulated with sex; place of birth; place of primary education; place of secondary education; marital status; responsibility for dependents; working students; family influence on decision to become a doctor; place of future practice (capital city vs elsewhere); level of future practice (hospital vs health center); and type of future practice (public vs private). Statistical significance for cross-tabulation of categorical variables was tested by Pearson Chi-square. For age and age of decision to study, central tendency and dispersion measures were computed and significance of differences tested with ANOVA [34].

**Results**

The most frequent among medical students was for the mother not to have complete secondary education, while fathers tended to have some levels of complete secondary or post-secondary education. The majority of students had at least one parent who had not complete secondary education. Fathers tend to be more educated than mothers (Table 1).

Female students had a higher percentage of fathers and mothers with tertiary education than males (Table 2).

Education of the mother was related to the age of the student and the age of decision to study medicine. In the first case, median age of students tended to be lower among those with more educated mothers. On the contrary, decision to pursue a degree in medicine was taken earlier by students whose mothers did not complete post-secondary education. This was particularly obvious in male children of mothers that did not complete

**Table 1 Distribution of educational achievement of father, mother and combined**

	Education of mother	Education of father	Combined level of education of father and mother
Parent did not complete secondary education	53 (58%)	31 (34%)	–
Parent with complete secondary education	15(16%)	18 (20%)	–
Parent with some level of complete post-secondary education	24 (26%)	43 (46%)	–
One of the parents did not complete secondary education	–	–	54 (61%)
One of the parents did not complete post-secondary education	–	–	13 (15%)
Both parents have some level of complete post-secondary education	–	–	21 (24%)

secondary education who decided to study medicine later than children of more educated mothers (Table 3).

Students born in Bissau, who completed their primary education there, who wanted to practice in the capital city rather than somewhere else in the country and with family members in the health professions were more

prone to have fathers with some sort of complete post-secondary education (Table 4).

Combined education of parents was related with age of students: the parents of younger students completed secondary education but at least one of them did not complete post-secondary education and this was due to the

**Table 2 Distribution of education of parents per sex of students (column %)**

Education of father	Sex of the student*		Education of mother	Sex of the student**		Combined education of both parents	Sex of the student***	
	M (n = 66)	F (n = 26)		M (n = 66)	F (n = 26)		M (n = 62)	F (n = 26)
Father did not complete secondary education	42.4% N = 28	11.5% N = 3	Mother did not complete secondary education	69.7% N = 46	26.9% N = 7	One of the parents did not complete secondary education	74.2% N = 6	30.8% N = 7
Father did not complete post-secondary education	22.7% N = 15	11.5% N = 3	Mother did not complete post-secondary education	12.1% N = 8	26.9% N = 7	One of the parents did not complete post-secondary education	9.7% N = 10	26.9% N = 11
Father has some level of complete post-secondary education	34.8% N = 23	76.9% N = 20	Mother has some level of complete post-secondary education	18.2% N = 12	46.2% N = 12	Both parents have some level of complete post-secondary education	16.1% N = 62	42.3% N = 26

Chi-square \* $p=0.001$ ; \*\* $p=0.001$ ; \*\*\* $p=0.001$

**Table 3 Distribution of education of mother by age of student and of decision to study medicine, stratified by sex**

Education of the mother	Sex of students	Age of decision to study medicine*				Age of the student**			
		N	Mean	SD	Median	N	Mean	SD	Median
		Mother did not complete secondary education	Male	27	17.2	6.0	17	40	23.4
	Female	5	10.8	1.6	12	6	24.0	2.2	24
	Total	32	16.2	6.0	16	46	23.5	1.9	23
Mother did not complete post-secondary education	Male	7	12.0	3.5	12	7	21.1	2.2	20
	Female	6	13.5	5.6	10.5	6	22.8	2.0	22.5
	Total	13	12.7	4.5	11	13	21.9	2.2	22
Mother has some level of complete post-secondary education	Male	10	13.5	3.2	13.5	11	22.3	1.6	22
	Female	7	13.1	2.3	12	10	22.7	2.8	22
	Total	17	13.4	2.8	13	21	22.5	2.2	22

ANOVA \* $p=0.055$ ; \*\* $p=0.026$

**Table 4 Relevant associations of education of father**

Education of father	Place of birth of student is capital city vs somewhere else* (n = 43 vs 48)	Student completed primary education in capital city vs elsewhere** (n = 61 vs 30)	Student wants to practice medicine in capital city vs elsewhere*** (n = 31 vs 61)	Students' family members are health professionals vs not* (n = 54 vs 38)
Father did not complete secondary education	16.3% vs 47.9% N = 7 vs 23	21.3% vs 58.6% N = 13 vs 17	25.8% vs 38.3% N = 8 vs 23	24.1% vs 69.2% N = 13 vs 18
Father did not complete post-secondary education	18.6% vs 20.8% N = 8 vs 10	23.0% vs 13.8% N = 14 vs 4	9.4% vs 25.0% N = 2 vs 16	18.5% vs 10.3% N = 10 vs 8
Father has some level of complete post-secondary education	65.1% vs 31.3% N = 28 vs 15	55.7% vs 27.6% N = 34 vs 9	65.6% vs 36.7% N = 21 vs 22	57.4% vs 20.5% N = 31 vs 12

Chi-square \* $p=0.002$ ; \*\* $p=0.002$ ; \*\*\* $p=0.024$ ; # $p=0.033$

interaction with the age of male rather than female students (Table 5).

Students with parents with some level of complete post-secondary education considered less frequently a practice outside the capital city (Table 6).

**Discussion and conclusions**

Our main interest in medical education is to study it as a health system intervention in order to contribute to health system’s strengthening in fragile states. This is discussed in the context of two frameworks: the labor market framework [35] and WHO’s health system strengthening framework [36].

The labor market framework extends the health workforce domain to include the educational sector, including pre-university education. This acknowledges that, as described from Cape Verde [37], Guiné-Bissau [38] and Brazil [39] students come ill-prepared from the secondary education sector to engage in university studies.

A recent review analyzed interventions that have been tried in higher- and middle-income countries to address health workforce training challenges. These concede the importance of the educational sector and include studies “on the themes of workforce planning, development of training school capacity, policies designed to attract students from underrepresented

areas, and to under-favored specialties, as well as training financing policies and training partnerships” [40].

What is not acknowledged is that households and families may have an important role to influence decisions that lead children to train as health care workers, the age of those decisions and future practice expectations hence, contributing to strengthen the health system. Among the main reasons to choose medicine as a profession, family influence, particularly from relatives working as health professionals, is a major factor [30, 31, 33, 37, 41–46]. These same influences are felt for the choice of nursing studies [47].

The results of this analysis corroborate those previous findings and seems to partly relate that influence to the level of parental education. As reported in the literature [8, 13], our results confirm that the isolated effect of each parent is different as it is the combined education of both parents. As described elsewhere [8, 11], parental influence also seems to vary according to the sex of the offspring. The higher the education of the father, the stronger the urban background of the offspring. Level of education of parents is also important in relation to the decision to study medicine and the age of starting those studies. It is also an important influence as to expectation regarding place of future practice: the

**Table 5 Relevant associations of combined education of parents**

Combined education of both parents	Sex of students	N	Age of students		
			Mean	SD	Median
One of the parents did not complete secondary education	Male	38	23.3	1.8	23.0
	Female	7	23.7	2.1	22.0
	Total	45	23.4	1.9	23.0
One of the parents did not complete post-secondary education	Male	6	20.8	2.1	20.0
	Female	6	22.5	2.3	22.5
	Total	12	21.7	2.3	20.5
Both parents have some level of complete post-secondary education	Male	9	22.8	1.5	23.0
	Female	9	23.0	2.8	22.0
	Total	18	22.9	2.2	22.5

ANOVA  $p=0.034$

**Table 6 Distribution of combined education of parents with preferred location of future practice**

Combined education of both parents	Student wants to practice	
	Capital city (n = 29)	Elsewhere (n = 59)
One of the parents did not complete secondary education	51.7% (n = 15)	66.1% (n = 39)
One of the parents did not complete post-secondary education	6.9% (n = 2)	6.9% (n = 11)
Both parents have some level of complete post-secondary education	41.4% (n = 12)	15.3% (n = 9)

Chi-square  $p=0.018$

highest the educational level, particularly of the father, the highest the expectation for a future urban practice.

The results from this study also allow to identify the reproduction of gender-based inequalities in Guiné-Bissau that should be further analyzed in relation to broader policy issues. The reproduction of gender inequalities means the persistence of sex-driven social differences [48, 49]. In the case of medical students this is seen by the level of education of their parents (i.e., the higher weight of fathers with some levels of complete post-secondary education contrasts with the higher weight of mothers who did not complete secondary education) and the fact that the percentage of female students is decreasing in recent years (i.e., femininity in medical education lowered from 31 to 24% between 2007 and 2016 [33]). Not only is this decrease in counter cycle with what is observed in most (low income) countries, but also it makes clear the need of effective policies to overcome anachronistic gender-based differences in this country.

The reproduction of gender-based inequalities in medical education becomes even more relevant to highlight due to differences in the relevance of parents' educational level between male and female medical students: for male students the access to medical education is less dependent on the parents' educational background than it is for female students. Saying differently: girls are more likely to progress in their studies in better educated families, while this relevance is less pronounced for boys. Although further studies on the resources that male students use to access medical schools are required, one key argument from these results is that the femininity of medicine in Guiné-Bissau depends directly on parents' educational background. This is relevant for public policies aimed at strengthening better education for all as a mean to ensure inclusive and equitable quality education (sustainable development goal—SDG-4), achieve gender equality and empower women and girls (SDG 5), promote productive and decent work for all (SDG 8), and reduce inequalities within countries (SDG 10).

The recognition of the importance of family and parental education regarding choice of education and expectations regarding future practice are already reflected in recent adaptations of WHO's health system strengthening framework that recognize the relevance of the household as another health system's building block [50]. It is widely accredited that households are key "influencers of health for their families by making daily decisions regarding foods to eat, healthy practices in the home, and use of scarce resources for health care and better nutrition" [51]. Our data and that of others, as reported above, recognize that households are also important regarding future training and a future career in the health sector. This recognition warrants the integration of household

characteristics and dynamics into HWFP frameworks. How to achieve that is the object of further scientific inquiry.

#### Abbreviations

HWFP: Health workforce planning; SDG: Sustainable development goals; WHO: World Health Organization.

#### Acknowledgements

Rosa Ferrinho for support with the literature review. Cátia Sá Guerreiro for assistance with data entry. Fundação para a Ciência e Tecnologia for funds to GHTM UDI/04413/2020.

#### Authors' contributions

All the authors read and approved the final draft of the study. PF supervised the overall strategic planning exercise, conducted the statistical analysis and wrote the firsts draft of the text. CN supervised data collection and commented on all drafts of the text. IF contributed to the analysis and the text. All authors read and approved the final manuscript.

#### Funding

The strategic planning referred to in the text was financed by the WHO Office in Bissau. PF was the coordinator of the planning team.

#### Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

#### Ethics approval and consent to participate

The data were collected as part of a strategic planning process by the Ministry of Health of Guiné-Bissau that included their approval as well as the approval of the dean of the faculty.

#### Consent for publication

Authorization to use data for publication was obtained from the Ministry of Health.

#### Competing interests

The authors report no conflicts of interest.

#### Author details

<sup>1</sup> Global Health and Tropical Medicine Research Center, Instituto de Higiene e Medicina Tropical, Universidade Nova de Lisboa, Rua da Junqueira 100, 1349 008 Alcântara, Lisbon, Portugal. <sup>2</sup> Ministério da Saúde, Bissau, Guiné-Bissau.

Received: 15 July 2020 Accepted: 16 October 2020

Published online: 25 November 2020

#### References

- Barnes GM. Emile Durkheim's Contribution to the Sociology of Education. *J Educ Thought Revue de la Pensée Éducative*. 1977;11(3):213–23.
- Rao SS, Singh S. Max Weber's contribution to the sociology of education: a critical appreciation. *Contemp Educ Dial*. 2018;15(1):73–92.
- Sirin SR. Socioeconomic status and academic achievement: a meta-analytic review of research. *Rev Educ Res*. 2005;75:415–53.
- White KR. The relation between socioeconomic status and academic achievement. *Psychol Bull*. 1982;91:461–81.
- Fonzaelz-DeHass AR, Willems PP, Doan Holbein MF. Examining the relationship between parental involvement and student motivation. *Educ Psychol Rev*. 2005;17(2):99–123.
- Arzad M, Shahzadi E, Mahmood A. Parents involvement at university level education: students perception in under developing country. *Eur Sci J*. 2016;12(22):294–304.
- Bowles S, Gintis H. The inheritance of inequality. *J Econ*. 2002;16(3):3–30.
- Buis ML. The composition of family background: The influence of the economic and cultural resources of both parents on the offspring's educational

- attainment in the Netherlands between 1939 and 1991. *Eur Sociol Rev.* 2012;29(3):593–602.
9. Davis-Kean PE. The influence of parent education and family income on child achievement: The indirect role of parental expectations and the home environment. *J Fam Psychol.* 2005;19:294–304.
  10. Dornbusch SM, Ritter PL, Leiderman PH, Roberts OF, Fraleigh MJ. The relation of parenting of style to adolescent school performance. *Child Dev.* 1987;58:1244–57.
  11. Hofmeyr H. Home background and schooling outcomes in South Africa: Insights from the National Income Dynamics Study. Stellenbosch Economic Working Papers: WP01/2018. [www.ekon.sun.ac.za/wpapers/2018/wp012018](http://www.ekon.sun.ac.za/wpapers/2018/wp012018). Accessed 22 June 2020.
  12. Hudson JB. The long-term performance and retention of preparatory division transfer students: 1983–1990. ERIC Document Reproduction Services No. ED 334918. 1991. <https://eric.ed.gov/?id=ED334918>. Accessed 22 June 2020.
  13. Hushak LJ. The contribution of school and non-school inputs to student achievement. Final Report. "ERIC Document Reproduction Services No. ED 085 410. 1973. <https://eric.ed.gov/?id=ED085410>. Accessed 22 June 2020.
  14. Lee RM, Peng SS. Measuring student at-riskness by demographic characteristics. San Francisco, CA: American Educational Research Association Meeting, April 20–24, 1992. ERIC Document Reproduction Service No. ED 347 679. 1992. <https://eric.ed.gov/?id=ED347679>. Accessed 22 June 2020.
  15. LeVine RA. Influences of woman's schooling on maternal behavior in the third world. *Comp Educ Rev.* 1980;9:578–105.
  16. Li Z, Qiu Z. How does family background affect children's educational achievement? Evidence from Contemporary China. *J Chin Sociol.* 2018;5:13.
  17. Lin R. Perception of family background and personal characteristics among Indian college students. *J Am Indian Educ.* 1990;29:19–28.
  18. Melby JN, Conger RD. Parental behaviors and adolescent academic performance: a longitudinal analysis. *J Res Adolesc.* 1996;6:133–7.
  19. Oh-Hwang Y. A cross-cultural study: Linkages among intelligence, psychosocial maturity, parenting practices, and academic achievement of adolescents. Doctoral dissertation, Purdue University, Lafayette, IN. 1994. <https://docs.lib.purdue.edu/dissertations/AAI9523369/>. Accessed 22 June 2020.
  20. Smith TE. Mother-father differences in parental influences on school grades and educational goals. *Sociol Inquiry.* 1989;59(1):88–98.
  21. Stevenson D, Baker D. The family-school relation and the child's school performance. *Child Dev.* 1987;58:1348–57.
  22. Erlendsdóttir G. Effects of Parental Involvement in Education. A Case Study in Namibia M.Ed. Thesis in Educational Administration. Faculty of Education Studies, School of Education, University of Iceland; 2010.
  23. Glick P, Sahn DE. Schooling of girls and boys in a West African country: the effects of parental education, income, and household structure. *Econ Educ Rev.* 2000;19(1):63–87.
  24. Kainuva A, Yusuf NBM. Influence of socio-economic and educational background of parents on their children's education in Nigeria. *Int J Sci Res Publ.* 2013;3(10):1–8.
  25. Lloyd CB, Blanc AK. Children's schooling in sub-Saharan Africa: the role of fathers, mothers, and others. *Popul Dev Rev.* 1996;22(2):265–98.
  26. Marbuah DA. Influence of Parental Income and Educational Attainment on Children's Years of Schooling: Case of Ghana. Master's thesis in Sociology of Education. Institutionen för pedagogik, didaktik och utbildningsstudier, Department of Education, Uppsala Universitet. 2017. <https://uu.diva-portal.org/smash/get/diva2:1092869/FULLTEXT01.pdf>. Accessed 22 June 2020.
  27. Cataldi EF, Bennett CT, Chen X. First-Generation Students College Access, Persistence, and Postbachelor's Outcomes. Stats in Brief, U.S. Department of Education; <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2018421>. Accessed 22 June 2020.
  28. Rawls M. The Relationship Between Mother's Level of Education and Parent Involvement. A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science at Virginia Commonwealth University. Richmond, Virginia. 2013. <https://scholarscompass.vcu.edu/cgi/viewcontent.cgi?article=4151&context=etd>. Accessed 22 June 2020.
  29. República da Guiné-Bissau. Ministério da Saúde Pública. Plano Nacional de Desenvolvimento Sanitário 2018–2022. Bissau. 2017.
  30. Ferrinho P, Sidat M, Fresta MJ, Rodrigues A, Fronteira I, da Silva F, Mercer H, Cabral J, Dussault G. The training and expectations of medical students in Angola, Guinea-Bissau and Mozambique. *Human Resour Health.* 2011;9:9.
  31. Fronteira I, Rodrigues A, Pereira C, Silva AP, Mercer H, Dussault G, Ferrinho P. Realidades e expectativas dos alunos da licenciatura de medicina da Guiné Bissau no ano lectivo 2007. *Acta Médica Portuguesa.* 2011;24:265–70.
  32. Marconi M, Lakatos E. Fundamentos de metodologia científica 2ª. São Paulo: Editora Atlas; 2007.
  33. Fronteira I, Guerreiro CS, Neves C, Ferrinho P. Realidades e expectativas profissionais dos alunos da licenciatura de medicina na Guiné-Bissau – evolução entre 2007 e 2016. *Acta Médica Portuguesa: Accepted for publication; 2020.*
  34. Maroco J. *Análise Estatística Com Utilização Do SPSS.* 6a Edição. Lisboa: Editora Pero Pinheiro; 2011.
  35. Sousa A, Scheffler R, Nyoni J, Boerma T. A comprehensive health labour market framework for universal health coverage. *Bull World Health Organ.* 2013;91:892–4.
  36. WHO. Everybody business: strengthening health systems to improve health outcomes: WHO's framework for action. Geneva: WHO; 2007.
  37. Delgado AP, Martins A, Ferrinho P. Medical training experience and expectations regarding future medical practice of the first class of medical students at the University of Cape Verde. *Acta Med Port.* 2017;30(10):699–703.
  38. Cisneros MMS. Cooperación técnica entre países en vías de desarrollo: Experiencia Cuba-Guinea Bissau. *Educ Med Super.* 1996;10(1):9–10.
  39. de Barros FPC, Ferrinho P. Medical education needs to counter urban bias and hospital-centrism of medical students. *Int J Health Plan Manag.* 2020; 1–3.
  40. Witter S, Hamza MM, Alazemi N, Alluhidan M, Alghaith T, Herbst CH. Human resources for health interventions in high- and middle-income countries: findings of an evidence review. *Human Resour Health.* 2020;18:1.
  41. Sousa F Jr, Schwalbach J, Adam Y, Gonçalves L, Ferrinho P. The training and expectations of medical students in Mozambique. *Human Resour Health.* 2007;5:11.
  42. Ferrinho P, Fronteira I, Sidat M, de Sousa JF, Dussault G. Profile and professional expectations of medical students in Mozambique: a longitudinal study. *Human Resour Health.* 2010;20(8):21.
  43. Ferrinho P, Fronteira I, Sidat M, Hipólito F, Mercer H, Dussault G. Formação médica em Moçambique: realidade e expectativas. *Revista Médica de Moçambique.* 2010;10:52–8.
  44. Ferrinho P, Valdes AC, Cabral J. The experience of medical training and expectations regarding future medical practice of medical students in the Cuban-supported Medical School in Timor-Leste. *Human Resour Health.* 2015;28(13):13. <https://doi.org/10.1186/s12960-015-0004-8>.
  45. Witter S, Wurie H, Namakula J, Mashange W, Chirwa Y, Alonso-Garbayo A. Why do people become health workers? Analysis from life histories in 4 post-conflict and post-crisis countries. *Int J Health Plann Manag.* 2018;33(2):449–59.
  46. Woodward A, Thomas S, Jalloh MB, Rees J, Leather A. Reasons to pursue a career in medicine: a qualitative study in Sierra Leone. *Glob Health Res Policy.* 2017;2:34. <https://doi.org/10.1186/s41256-017-0054-7>.
  47. Fronteira I, Seca A, Meneses A, Ferrinho P, Lapão L. Expectativas profissionais dos estudantes de enfermagem de nível superior: Evidência de dois países da África Subsariana. *Anais do Instituto de Higiene e Medicina Tropical.* 2014;2014(13):59–67.
  48. Laslett B, Brenner J. Gender and social reproduction: historical perspectives. *Annu Rev Sociol.* 1989;15:381–404.
  49. Sem G, Östlin P. Unequal, Unfair, Ineffective and Inefficient Gender Inequity in Health: Why it exists and how we can change it. Women and Gender Equity Knowledge Network, WHO Commission on Social Determinants of Health. Geneva. 2007. [https://www.who.int/social\\_determinants/resources/csdh\\_media/wgekn\\_final\\_report\\_07.pdf](https://www.who.int/social_determinants/resources/csdh_media/wgekn_final_report_07.pdf).
  50. Sacks E, Morrow M, Story WT, et al. Beyond the building blocks: integrating community roles into health systems frameworks to achieve health for all. *BMJ Global Health.* 2019;3:e001384.
  51. Le Baan K. How Social Capital in Community Systems Strengthens Health Systems: People, Structures, Processes. CORE Group, USAID: CHIP. Washington; 2011.

## Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.