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5
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1 **ABSTRACT.**

2 This paper investigates the literature on medical students' study habits and the surrounding sociocultural factors.
3 A systematic literature review was undertaken, aiming to establish what is known, identify gaps in the literature
4 and suggest what further research needs to be done. The review followed the PRISMA guidelines and identified
5 13 papers that were within the inclusion criteria. These papers were analyzed and discussed through a
6 sociocultural lens, dividing the results into four sociocultural groupings: Personal, Behavioral, Environmental
7 and Cognitive. The findings suggest that while sociocultural factors influence medical students' study habits,
8 individual behaviors and attitudes predominantly guide their study decisions. The findings also suggest that
9 there is little research into the intersection of these factors. It is recommended that the factors drawn from this
10 systematic review be used to formulate more direct research into study habits with a magnified approach to help
11 provide medical institutions, policymakers, and students with information to better inform their decisions and
12 produce efficient, healthy study habits.

13

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1 INTRODUCTION.

2 Study habits are the routines and activities students undertake to support their learning. Sociocultural
3 components, such as socioeconomic background, religion, ethnicity, and family, are among the many factors
4 that can influence a student's study habits.¹⁻³ Study habits are regular activities, and it is this regularity of use
5 that makes them a 'habit'. These habits are not limited to one form of study or one study technique, nor are they
6 solely about revision for assessment. Study habits are systems developed by individuals that they think will best
7 support their learning. Students have different study strategies, different study timetables, and can get distracted
8 during their studies; however, good study habits can make a difference to the likelihood of academic success.⁴⁻
9 ⁵ Not all students will have effective study habits and some study habits may be detrimental to academic
10 development.⁶ However, previous studies have demonstrated that academic performance can be improved if
11 students can develop purposeful and regulated approaches to their studies. For example, Miller has suggested
12 that students from 'at risk' backgrounds (e.g., economically disadvantaged students) can improve their approach
13 to study and their academic outcomes if they have appropriate study plans.² This shows that student outcomes
14 may be enhanced if we provide medical institutions and students with information to better inform their study
15 decisions. This review aims to achieve this by examining the literature regarding medical students' study habits
16 and the surrounding sociocultural factors.

17
18 One of the main indicators of success in medical students is past academic performance; however, this only
19 accounts for 23%.⁷ This means that there is scope to investigate wider, non-academic factors. Modern medical
20 education has placed students at the center of their learning with the introduction of key documents that
21 emphasize a curriculum focused on knowledge, skills, attitudes, and behaviors (see for example, the General
22 Medical Council's (GMC) 'Tomorrow's Doctors' and 'Outcomes for Graduates').⁸⁻⁹ These documents have
23 motivated institutions to modernize their curricula to better support student development. This modernization of
24 the curriculum has led to a more personalized approach to education.⁸ However, despite curricular
25 modernization, Wynter et al. found that the design and implementation of medical curricula did not support a
26 wide range of students' study needs.¹⁰ This raises issues of curricula misalignment and simultaneously
27 demonstrates the need for students to become metacognitively aware of what they are studying, how they study,
28 and the habits they have developed either before or during medical school.

29
30 The resources that are available to students can be seen as a form of capital, where a student's finances and
31 connections can help them prepare for effective study. Bourdieu discussed the idea of social capital being the
32 networks and relationships you have with other people and the way you use them.¹¹ In the context of education,
33 if a student has higher social capital, then they are more likely to interact with their seniors and colleagues which
34 can lead them to gain skills that might benefit their academic outcomes.¹² Through collaborative learning,
35 students engage in enactive learning, gathering multiple perspectives and developing a critical approach to the
36 world.¹³⁻¹⁴ Sociocultural factors affect how students can attain this capital. Those from lower socioeconomic
37 backgrounds may have worked hard to maximize their limited social capital to gain entry into medical school;
38 however, once in medical school, they might struggle to operationalize new social relationships, hindering their
39 educational growth.¹⁵ The conceptions of learning that students build structure the way they study and this
40 perception is shaped by their upbringing and by those around them, so it is pivotal that the relevance of
41 sociocultural factors is understood.^{2,16}

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Students from more privileged, more supportive, or more closely bonded backgrounds may have been supported to develop good study habits at an early age, while other students may not have had this guidance.¹⁷ To understand this, Harden et. al. suggest we look beyond students' cognitive structures into non-cognitive components such as student motivation, student identity and student attitudes towards studying.¹⁸ If educators can increase their contextual understanding of factors such as these, then they may be better able to develop approaches that will help enhance methods to support a range of students' study habits.

The development of study habits can be explained by Bandura's social cognitive theory, which states that if we observe someone perform a behavior with positive consequences then we use this information to guide our subsequent behaviors.¹⁹ In the context of medical education, this modelled behavior can be seen with students revising with friends - where social interactions contributing to the development of semantic networks. Schunk describes how Bandura's social learning theory highlights the personal, behavioral, environmental, and cognitive aspects of human development.²⁰

This paper seeks to critically analyze the current literature to establish what is known about the impact of sociocultural factors on student study habits. This systematic literature review identified appropriate studies using Boolean search terms and various inclusion and exclusion criteria. These studies were then critically appraised. In doing so, core themes were identified and gaps in the literature were highlighted for future research. There have been many meta-analyses and systematic reviews on study habits and how they link to academic achievement, but few have looked at how these study habits are influenced by non-cognitive factors. Where papers have looked at sociocultural factors (see for example, Gilavand & Emad, 2021, Munusamy & Ganesan, 2021, Khan et al., 2021) these studies tend to find papers that are focused on the academic side more than the contextual making of a student.²¹⁻²³ In this way, this paper offers a new perspective as it asks the question, 'How do sociocultural factors impact medical students' study habits?'

1 METHODS

2 A systematic review of the literature was undertaken, following the guidance of Peters et al. and Xiao and
3 Watson to explore the extent to which sociocultural factors impact medical student study habits.²⁴⁻²⁵ This
4 systematic review was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses
5 (PRISMA) guidelines as well as further literature which has informed decisions made during the process.²⁶⁻²⁷
6 Following the PRISMA guidelines increases transparency; allowing readers to assess the appropriateness of
7 the methods and the trustworthiness of the findings.²⁷

8
9 To establish a clear scope for the study and to establish the parameters around study selection, two key terms
10 from the research question, 'study habits' and 'sociocultural factors', need defining.²⁶

11
12 The term 'study habits' refers to an individual's unique approaches to learning. Study habits are the repeated
13 practices an individual has developed when conducting learning activities to gain information these can be
14 systematic or disorderly, efficient, or inefficient.²⁸⁻²⁹ Students who develop productive and efficient study habits
15 are more likely to attain higher academic outcomes.³⁰⁻³³ The term 'sociocultural factors' refer to the social and
16 environmental constitution of an individual. Sociocultural factors are central to human experience and sense-
17 making.³⁴ Such factors include socioeconomic status, epistemological beliefs, cultural values, ethnicity, living
18 situation and health status.³⁵ Social learning theory and sociocultural theory draw from these factors saying that
19 an individual's development is confined to an overarching sociocultural system which interacts with internal
20 cognitive structures.^{19,35-36} Through these interactions, we learn and progress both in educational and non-
21 educational contexts.

23 *Identification*

24 This systematic review covered the period 2009-2023 applying a Boolean search using keywords formed of
25 derivatives of the terms 'medical student', 'sociocultural' and 'study habits'. Search terms were used in
26 combination with a series of Boolean "AND/OR" operators and asterisk wildcards (Table 1). These terms were
27 used to search several databases including PubMed, Education Research Complete, Web of Science, Scopus,
28 and PsycINFO.

30 [Table 1 near here]

32 *Eligibility criteria*

33 For articles to be included in this review, they had to meet the following criteria. Articles were included if they
34 were original research conducted with quantitative, qualitative, or mixed methodologies. Only peer-reviewed
35 research was considered; therefore editorials, dissertations, reports, book chapters and essays were excluded.
36 The reason for this is that peer-reviewed articles tend to have gone through a rigorous process of analysis and
37 evaluation; therefore, their outcomes are more trustworthy. Only research published in English was considered
38 to avoid any translation errors. The papers included were published from 2009 onwards. The start date was
39 drawn from the publication date of the GMC document 'Tomorrow's Doctors' which outlines standards for
40 undergraduate medical education in the UK, where the research team is situated.⁸ This publication is the basis
41 on which the current 'Outcomes for Graduates' document was developed.⁹ This document is relevant to this

1 study as it outlines that part of the medical education curriculum should be focused on examining how external
2 factors can affect learning about health and disease. The exclusion criteria related to the type, rigor, language,
3 and dates of the articles. Articles that were not original research were excluded; articles that had not been peer
4 reviewed were excluded; articles that were not published in English were excluded, and articles that were
5 published outside the set timeframe were excluded.

6 7 *Screening*

8 Although the date parameters of this study were defined by key documents from the UK, the scope of search
9 was much broader and included all relevant literature published in English. Once databases were searched and
10 studies found, the initial findings were exported to Endnote reference software and duplicates identified by the
11 software were deleted. Following this, the titles and abstracts were screened against the criteria (Table 2) by
12 one of the research team. The screening process ensured that the selected studies matched the aims of this
13 systematic review and met the inclusion criteria. Studies that passed the initial screening process were then
14 read thoroughly to check that the full texts met the inclusion criteria. Through an initial scoping review, the term
15 'study skills' was found to be used synonymously with 'study habits'—despite some differences between these
16 terms—and was, therefore, included within the search terms to allow for a comprehensive review. Data
17 screening was undertaken by one researcher as part of a student project; however, measures were put into
18 place to ensure consistency of results through regular meetings with their supervisor. If this study were to be
19 repeated, multiple researchers could be involved to reduce possible selection bias and provide inter-rater
20 validation.

21
22 [Table 2 near here]

23 24 *PRISMA screening*

25 A total of 1694 papers were found in the database search. These papers were exported to Endnote referencing
26 software and 90 were excluded due to being duplicates. Following the screening of titles and abstracts, 1455
27 papers were removed as they did not meet the inclusion criteria for the population or area of focus. For example,
28 some papers did not focus on medical students and others focused on researching different formats of teaching
29 interventions rather than students choosing a format as a regular resource for study. Following this, 149 papers
30 underwent full text screening, all of which were retrievable. This led to a further 136 papers being excluded. Of
31 these, 135 were removed due to not focusing on sociocultural factors, and one paper was excluded due to being
32 redacted. This left 13 papers that met the screening criteria. A full account of the screening system, following
33 the PRISMA guidelines, can be seen in Figure 1.

34
35 [Figure 1 near here]

36 37 *Methodological limitations*

38 The analysis of the 13 papers used a holistic approach to examine how the papers aligned with the four themes
39 drawn from Bandura and Schunk.¹⁹⁻²⁰ This meant that the alignment was based on researcher review of the
40 core messages found in the papers, rather than objective standards. There is the potential that different
41 researchers may have found different themes; however, the research team discussed each instance, and no

1 discrepancies were found. This meant that the assurance of quality comes from the rigor of the review process
2 rather than from the application of objective tools. Potential publication bias could also be a slight concern as
3 articles are published based on a journal's aims and scope; therefore, there may be unpublished findings that
4 may be relevant but to which the research team did not have access. There may be some limitations regarding
5 the inclusion and exclusion criteria – as there will be research that falls outside these criteria and has not been
6 examined; however, in setting transparent criteria, this review hopes to offer an honest review of what was
7 identified through the criteria.

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1 RESULTS.

2 The breakdown of identified papers, following guidance from Ahtisham and Parveen³⁷, can be seen in Table 3
3 where the identified papers are coded into the four themes drawn from Bandura and Schunk: Personal,
4 Behavioral, Environmental and Cognitive.¹⁹⁻²⁰

5
6 [Table 3 near here]

8 *Personal factors*

9 Personal factors are the ideas and values people hold which they act upon in their daily lives and that form their
10 characteristics. Seven papers fitted into this theme and within these papers three core concepts were identified:
11 socioeconomics, religiosity, and the use of 'study drugs'. This search found differing results on whether
12 socioeconomic background influenced study habits. For example, both Samarasekara⁴⁰ and Jiang, Horta and
13 Yuen⁴³ suggested the modality of learning appears to be influenced by family income where financial support
14 allows individuals to purchase learning materials and contribute to their general wellbeing. However, while
15 Shukri and Mubarak⁴² found that students' academic performance was influenced by several factors, they found
16 no significant association between financial factors and academic performance. These different perspectives
17 can be explained when we look at the context in which these three studies were undertaken. The studies by
18 Samarasekara⁴⁰ and Jiang, Horta and Yuen⁴³ were based in Sri Lanka and Iran respectively - these are low to
19 middle income nations. The study by Shukri and Mubarak⁴² was set in Saudi Arabia where the participants'
20 family income was described as high. From this we can clearly see the impact of socioeconomics - when
21 students have little disposable income it affects their study decisions but, for students from wealthy
22 backgrounds, socioeconomics is not even considered to be a relevant factor. The findings also suggest that
23 socioeconomics can be perceived in different ways where a lack of disposable income can be a source of stress
24 in the short term; however, for some students, the idea of becoming a doctor can reduce this stress, as becoming
25 a highly paid and economically independent individual motivates them to study to achieve a good grade.⁴³⁻⁴⁴

26
27 Another personal factor to consider when looking at sociocultural factors is religion. In the UK Census (2021)⁴⁴,
28 over half of the respondents identified as having a religion and in the UK's National Health Service workforce,
29 approximately 73% of licensed doctors identify with a religion.⁵⁰ Henning et al.,⁴⁵ although not directly looking
30 into study habits, found that religious observance did not negatively impact study hours and Sta. Maria et al.,⁵¹
31 investigating religiosity within undergraduate students, found that religious activity was associated with deep
32 and strategic learning habits. The findings of these studies demonstrate the importance of examining the
33 contextual nature of research outcomes. The study by Sta. Maria et al. was undertaken in the United States of
34 America where there is a high level of religious observance. Previous studies in the United States had already
35 established some links between religiosity and academic performance in the Southern and Midwestern regions
36 and Sta. Maria et al. were able to support such findings with their work in the Northeast region. The study by
37 Henning et al.⁴⁵ was based in New Zealand where rates of religious belief are lower, for example, in their study,
38 117 of the 275 participants identified as being non-religious. So, when we look at religion and its impact on study
39 habits, we need to consider the relationship between religion and its context. There was further contextual
40 evidence in the literature. A related study by Salem et al. took place in Saudi Arabia, where the use of
41 transportation seemed to affect the study habits of students.⁵² Women were not allowed to drive in Saudi Arabia

1 at the time of the study so male students, who often had their own cars, had more freedom of movement,
2 spending more time partaking in social activities. Females had reduced movement, giving them more time to
3 study and less time to socialise.³⁹ In these instances, it seems that religious observance can impact study time
4 *per se* and that there is a wider impact of religion on the capacity to study.

5
6 As well as being impacted by socioeconomics and religion, evidence was found of the link between 'study drugs'
7 and study habits; however, there was no evidence of this link yielding effective outcomes. Haas et al.
8 investigated the use of unprescribed amphetamine medication amongst 707 Brazilian medical students and
9 found that 22 had used them the month before the investigation and 56 had done so more than one month
10 beforehand, with motivations largely linked to longer study hours and increased concentration.⁴⁶ These authors
11 also found that non-prescribed drug use for academic performance was significantly associated with studying
12 at a private university, being in an older age bracket, recent cannabis use and rates of alcohol consumption.
13 These patterns of drug use are in line with previous research on nonmedical prescription stimulant use among
14 college students.⁵³⁻⁵⁴ Motivations for non-prescribed drug use included longer study hours and increased
15 concentration; however, beyond stimulated attention, medical students did not report that the drugs helped them
16 to develop enhanced learning strategies. The findings related to 'study drugs' and study habits showed that
17 drug misuse was related to local cultural factors and the general prevalence of nonprescribed use, but the
18 authors did not identify any learning benefits.

19 *Behavioral factors*

20 Behavioral factors refer to the attitudes and perspectives medical students have on studying and how they act
21 upon these opinions. Four papers were coded under this theme and discussed behavior in relation to culture,
22 learning preferences, and interaction. Bandura's social learning theory illustrates that as an individual interacts
23 with the people around them this can produce both positive and negative outcomes.¹⁹ Jouhari, Haghani and
24 Changiz reported that positive attitudes towards self-regulation skills in students were facilitated by family
25 environment and emotional support, aligning with other research.⁴¹ Parental support and expectations differ
26 from culture to culture, for example, students from non-Western backgrounds reported higher parental
27 expectations as compared to those from Western backgrounds.⁵⁵⁻⁵⁶ While this may appear to be positive, it was
28 also found that those coming from backgrounds of higher expectations had an increased rate of burnout.

29
30 Different cultures can imbed certain traits within students that might affect their studies in medicine. Khoo found
31 that the cultural behaviors of medical students from Eastern countries (described as countries from Pakistan to
32 Korea) created difficulties when implementing problem-based learning.⁵⁷ Such factors included a fear of
33 confrontation, strong respect for authority, reluctance to ask questions and low participation in class discussions.
34 Trends seen in Frambach et al. describe other differences between Eastern and Western cultures and found
35 that students with Western educational experiences were seen to be more vocal and more likely to offer their
36 opinions in class.⁵⁸ In relation to study habits, increased confidence in speaking English and talking in groups
37 means students might engage in more discussion-based study activities. Due to the substantial involvement of
38 contextual factors, Frambach et al. suggest that discussion-based methods are likely to pose challenges in any
39 culture as cultural values might be incompatible with the method.⁵⁸

1 Another behavioral factor was identified by Wynter et al. in the study of penultimate and final year medical
2 students in Australia.¹⁰ They found that attending small group tutorials was statistically insignificant when
3 revising old material and attending lectures was identified as the least used resource for revision. These findings
4 were also supported by a lack of student engagement - where they limited their attendance in these study
5 sessions. Jiang, Horta and Yuen demonstrated further how certain behaviors can negatively impact students.⁴³
6 They found that Chinese teachers' behaviors towards international students, due to language barriers, caused
7 a lack of confidence in their students, leading to ineffective teaching and a lack of interaction with students. This
8 exacerbated learning difficulties which most likely led students to have to spend more time outside of scheduled
9 teaching time catching up. From these studies, it is clear that the educational environment is a significant
10 determinant of the behavior and attitudes of medical students from an array of educational and cultural
11 backgrounds.³⁹

12 *Environmental factors*

13 The environment people interact with in their daily lives is a personal attribute which constitutes part of their
14 non-cognitive being. It was found that factors such as the home and academic environment are relevant to good
15 study. This aspect of the environment was discussed in four of the eight papers within the review.^{39-41,43} Familial
16 support was a reoccurring theme. In the study by Jiang, Horta and Yuen, participants reported that family and
17 friends supported them during academic struggles.⁴³ Similarly, Jouhari, Haghani and Changiz noted that self-
18 regulated learning (SRL) is supported through family networks and that interaction and motivation from peers
19 were positive aspects for SRL.⁴¹ The motivation to study is linked to study habits and is seen in the Hullian
20 equation: Performance = Drive (motivation) x Habit.⁵⁹ As students improve their SRL, they develop study habits
21 and develop a reflexive understanding of the individual and their environment allowing them to better plan and
22 organize their learning.⁵⁶⁻⁶³ However, Shukri and Mubarak found that wider contextual factors such as a
23 student's marital status, residence pattern and parental educational levels, do not directly impact the efficiency
24 of the learning process.⁴²

25
26
27 The medical institution also has a role in student motivation through providing a variety of placement sites and
28 exposing students to a breadth of medical conditions. Qaiser et al. highlight that a poor institutional environment
29 can decrease motivation to study – something that is likely to influence study habits.³⁹ Further evidence of the
30 impact of the environment came from Didarloo and Khalkhali who revealed a statistically significant difference
31 in study in relation to students' housing status.³⁸ The findings show that students living in better facilities had
32 mental peace whereas those in poorer conditions were impacted by noise, interruptions, and discomfort.
33 However, depending on cultural norms and economic background, students may not have a choice on whether
34 they live at home or move out to external accommodation. Relatedly, findings from Kommelage and Thabrew
35 show students use informality, familiarity, and social bonds to acquire the knowledge required for their
36 examinations – thus their interaction with peers was part of the study process.⁴⁷ However, Frambach et al. found
37 that cultural factors can influence whether students engage in positive peer interactions and that interaction
38 could be impacted due to hierarchical relations and uncertainty.⁵⁸

39 *Cognitive factors*

1 Sociocultural factors can affect an individual's cognition and the way they think. Six papers were coded as
2 focusing on cognition and highlighted concepts such as the underperformance of specific cohorts, the motivation
3 to learn, and self-efficacy. Miller found that some 'at-risk' students lacked a detailed understanding of the
4 significance of scheduling their work.² Simply putting in more study hours was found not to work; instead,
5 students were found to benefit from study plans that allowed for a range of cognitive inputs. The role of variety
6 in supporting metacognition was also found in Wynter et al. where students reported using a variety of e-learning
7 tools in addition to the use of traditional methods.¹⁰

8
9 Isik et al., based in the Netherlands, found that there was some difference in the ways that some ethnic groups
10 adopted study strategies which mediate the relationship between motivation and academic performance.⁴⁸
11 Dutch students were associated with strategic learning and non-Western students were associated with deeper
12 learning.⁴⁸ The way students are treated and spoken to can influence the way they think about learning. Qaiser
13 et al.³⁹ reported that the regulations set in place in institutions and countries can affect self-efficacy and self-
14 regulated learning. Such factors include the likelihood of humiliation and degradation or the enforcement of
15 gender segregation and uniform. These policies were resented and reported to affect motivation, self-efficacy,
16 confidence, and student interaction. A majority of the students in Kommelage and Thabrew felt that interaction
17 helped reduce cognitive barriers; however, it should be noted that where interaction takes place within
18 homogeneous groups, outcomes may be limited.⁴⁷ Here we see that the interactions guide how students think
19 about study, and that this can be impacted by certain sociocultural norms and groupings.

20
21 Other sociocultural factors relating to cognition were highlighted in Wynter et al.¹⁰ and Kommelage and
22 Thabrew⁴⁷ where there was evidence that study habits were affected by general trends in education. For
23 example, Wynter et al found that changes in the way that educational technology is used have led to medical
24 students being more selective and more self-directed in their study habits.¹⁰ Kommelage and Thabrew also
25 found evidence that the increased use of technology and peer-to-peer learning have effected how students
26 choose to learn, reporting that these approaches to study reduce the cognitive distance between students and
27 their learning.⁴⁷

1 DISCUSSION.

2 A variety of sociocultural factors influence medical students and their study habits. Using the work of Bandura
3 and Schunk, this study was able to organize the extant literature into four key factors: Personal, Behavioral,
4 Environmental and Cognitive.¹⁹⁻²⁰ The personal factors that impact study habits include religious beliefs,
5 socioeconomic status, and study motivation. Behavioral factors are the approaches students take to study, the
6 resources they use, and the cultural norms that influence their study habits. Environmental factors are wider
7 social determinants such as family networks, friendship groups, the physical environment, geographical
8 location, and the teacher-student relationship. The cognitive factors that influence study habits include self-
9 efficacy, language barriers, attitude towards studying medicine and opportunities for strategic or deep learning.
10 While these four themes are presented as separate items, the fact that many sources coded into more than one
11 theme showcases that multiple factors intersect to form medical students into different people with different
12 study habits. This suggests a multifactorial impact on study habits.

13
14 This systematic review critically analyzed the literature to establish the influence of sociocultural factors on
15 medical students' study habits. The findings show that sociocultural factors impact study habits to a certain
16 extent but, beyond a certain point, it seems individual behaviors and attitudes are more important to students'
17 decision making. Analysis of the identified papers demonstrates that multiple factors shape medical students'
18 study habits. Personal factors such as motivation, identity and attitude towards studying were found to impact
19 choices regarding study habits.^{18,35,41} There was also some discussion on personal choices regarding the use
20 of 'study drugs'.^{46,53-54} It was also found that study habits are affected by sociocultural factors such as familial
21 support networks and expectations,^{39-41,43} the study environment,⁶⁰⁻⁶¹ Western/non-Western cultural norms and
22 expectations,^{39,48,57-58} and national norms regarding specific qualities such as the gender^{39,52} or religiosity.^{39,45}

23
24 This systematic literature review offers insight into how sociocultural factors impact study habits. From this
25 review, we can see that individuals internalize their sociocultural circumstances, this influences their inner
26 values and beliefs, and this impacts the development of their study habits.^{11,19,20} The international variety of the
27 studies examined in this review makes the generalizability of these findings more likely; however, gaining
28 primary data regarding these findings would mean that the contextualized study habits of medical students could
29 be better understood. These findings can now be used to formulate primary research into the study habits of
30 medical students to help provide medical institutions and students with strategies to develop efficient, healthy
31 study habits. In doing so, future research may wish to consider the following list of research questions. In
32 developing research projects to address these five questions, it is expected that individuals, policymakers, and
33 institutions will be able to develop practical strategies to support the study habits of diverse student populations:

- 34
- 35 • What is the impact of external factors such as housing and socioeconomics on medical students' study
36 habits?^{38,40,42,44,47}
 - 37 • What is the impact of internal factors such as confidence and autonomy on medical students' study
38 habits?^{39,45}
 - 39 • What self-regulatory measures do medical students employ to enhance their study habits?^{41,48}
 - 40 • What institutional interventions can be employed to enhance medical students' study habits?^{2,43}
 - 41 • How do medical students regulate their study habits?^{10,46}
- 42

1 **SUMMARY - Medical Students' Study Habits Through a Sociocultural Lens**

2 This systematic review critically analyzes the literature to establish the influence of sociocultural factors on
3 medical students' study habits. A systematic literature review was undertaken to establish what is known,
4 identify gaps in the literature and suggest what further research needs to be done. The review followed the
5 PRISMA guidelines and identified 13 papers that were within the inclusion criteria. These papers were analyzed
6 and discussed through a sociocultural lens. From a sociocultural perspective, students from certain
7 backgrounds may have been supported to develop good study habits at an early age, while other students may
8 not have had this guidance. To understand this, this study looked beyond students' cognitive structures into the
9 many non-cognitive components such as student motivation, student identity and student attitudes towards
10 studying. This was done in the expectation that, if educators can increase their contextual understanding of
11 students, then they may be more likely to develop educational approaches that better support student learning.
12 The sociocultural lens for the analysis of the literature was drawn from social cognitive theory, dividing the
13 results into four sociocultural groupings: Personal, Behavioral, Environmental and Cognitive. The findings show
14 that sociocultural factors impact medical student study habits to a certain extent but, beyond a certain point, it
15 seems individual behaviors and attitudes influence students' decision making. Analysis demonstrates that
16 factors such as motivation, identity, attitude, family, support networks, network expectations, gender and religion
17 all have some impact on medical students' study habits. These factors can now be used to formulate more
18 direct research into the domain of study habits in the hope of generating empirical data that will set out
19 practicable applications of this new insight. This will help provide medical institutions, policymakers, and
20 students with information to better inform their decisions and support the development of efficient, healthy study
21 habits. The international variety of these studies makes the generalizability of these findings more likely;
22 therefore, many medical institutions can look at these findings to help identify any trends applicable to their
23 setting. Gaining primary data regarding these findings would mean that the contextualized study habits of
24 medical students are better understood. Therefore, specific support systems can be developed to ensure the
25 university experience caters for student learning through addressing sociocultural needs.

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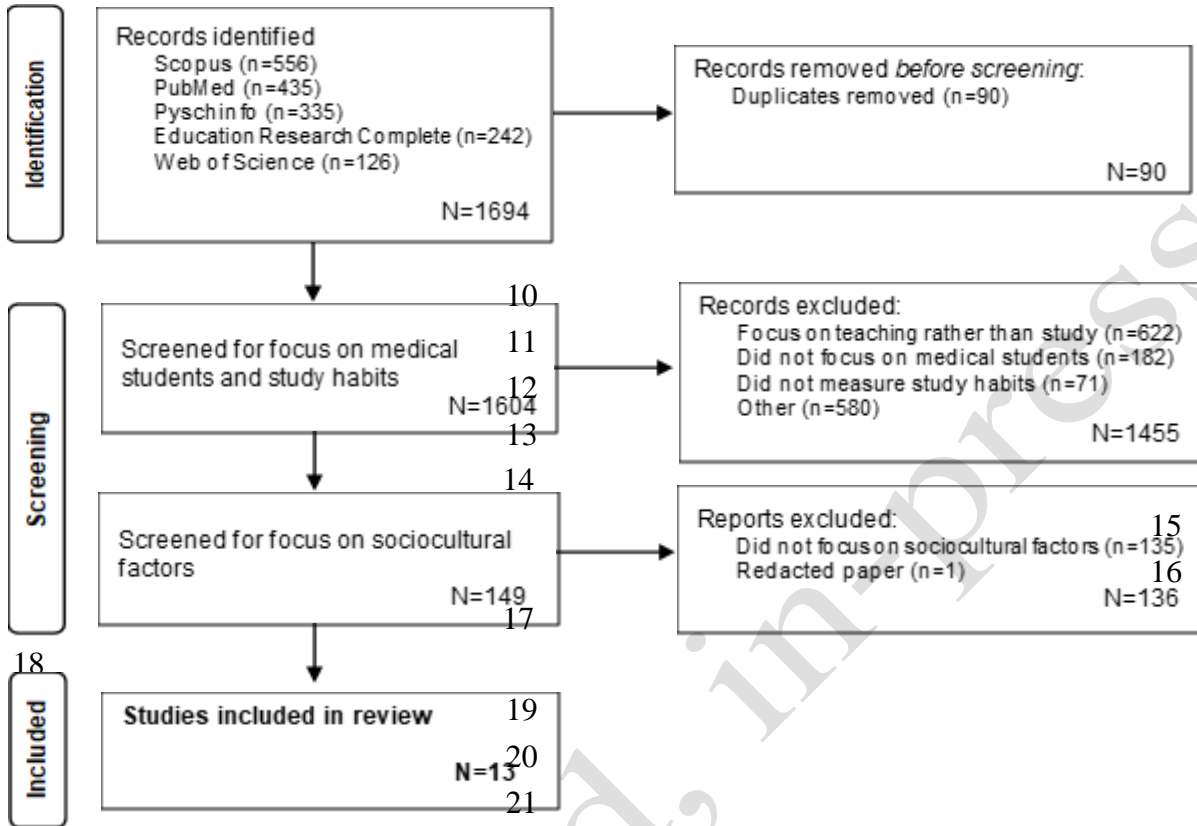
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1 **FIGURES AND TABLES.**

3 **Figure 1. Overview of the Screening Process, Following PRISMA Guidance (Page et al., 2021)**



1 **Table 1. Search Terms Used During the Database Search**

Key search term	"medical students"		"sociocultural"		"study habits"
Derivatives	medic* undergrad*		sociocultur* socio-cultur* socio*		revis* habit* study
Wider / aligned derivative terms	MBBS MbChB	AND /OR	divers* religio* ethnic* famil* age gender female male	AND /OR	study skills academic study study approach study attitude

2

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1 **Table 2. Screening Criteria Once Database Search Completed**

Screening Criteria
Discussed the population of interest – Medical students
Measured study habits/skills
Touched on any aspect of sociocultural factors
Original research conducted

2

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1 **Table 3. 13 Articles Coded Using Themes from Bandura (1977) and Schunk (1989)**

Authors (Date)	Sample Size & Data Collection Method	Summary of Findings	Theme
Didarloo & Khalkhali (2014) ³⁸	A cross-sectional study of 340 students selected using a simple sampling method.	Positive correlation between study skills and the students' family housing status and academic level. Poor study skills can potentially jeopardize academic performance.	Environmental
Kaiser et al (2020) ³⁹	A sequential mixed method study involving a questionnaire and three focus groups.	The barriers faced by medical students in achieving self-regulated learning are contextual. Institutional policies may affect the autonomy and confidence of learners.	Personal Behavioral Environmental Cognitive
Samarasekara (2022) ⁴⁰	A cross-sectional descriptive study of 778 undergraduates and pre-med graduates, using self-administered questionnaire.	Most students encountered problems when using e-learning methods, and most of these problems were related to poor economic status.	Personal Environmental
Jouhari, Haghani & Changi (2015) ⁴¹	Content analysis of 19 medical students, purposively sampled, in semi-structured, in-depth interviews.	Five main themes were found to affect self-regulated learning: family, peers, instructors, educational environment, and student.	Behavioral Environmental
Shukri and Mubarak (2019) ⁴²	A semi-structured, self-administered questionnaire given to 261 students.	Academic performance of senior medical students is influenced by many factors that are responsible for 21.5% of variability in grade point average.	Personal Environmental
Miller (2014) ²	34 students given surveys pre and post enrolling on the course.	At-risk medical students may have inappropriate study plans that can be improved through participation in a program that emphasizes study skills development.	Cognitive
Jiang, Horta & Yuen (2022) ⁴³	Semi-structured interviews with 40 international students from developing countries.	Positive factors affecting academic success were students support systems and campus resources. Negative factors were language barriers, adjusting to the medical education system, problems with online learning, sociocultural issues, and wellbeing issues	Personal Behavioral Environmental
Wynter et al. (2019) ¹⁰	350/1083 medical students from two universities completed an online survey.	Notes and textbooks were the most frequently used resources for learning new material. Question banks were the most frequently used revision resource.	Behavior Cognitive
Amin et al. (2009) ⁴⁴	Questionnaire-based survey with stratified random sampling among 192 medical students.	Students' study is determined by factors such as educational incentives, learning support, assessment, and competition. External factors such as family, job prospects and expectations about the future play a critical role.	Personal Environmental Cognitive
Henning et al. (2015) ⁴⁵	275 medical students completed two WHO surveys. Four students took part in a focus group.	Having a belief system assisted students in coping with the academic learning environment. However, religious expressions did not translate into hours of study or academic achievement.	Personal

Haas et al. (2019) ⁴⁶	Cross-sectional study. 698 students from two universities filling a questionnaire at the start and end of classes.	Psychostimulant misuse patterns do not support effective study. Strategies to address psychostimulant misuse should take local factors (institutional or cultural) into consideration.	Personal
Kommelage & Thabrew (2011) ⁴⁷	Four focus groups with eight medical students per group. Seven in-depth, one-on-one interviews with other students.	Students use informality, familiarity, and social bonds to acquire the knowledge required for their examinations. Findings suggest the need for implementing a peer assisted learning process.	Environmental Cognitive
Isik et al. (2017) ⁴⁸	A cross-sectional study as part of a longitudinal study. 618 students were involved.	Autonomous motivation has a positive association with GPA through strategic approaches for the ethnic majority students only.	Cognitive

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