

A Comparative Content Analysis of Human Health Care Coverage Across Grade 6, 7, and 8 General Science Textbooks in Pakistan's Single National Curriculum (2022)

Adina Ahmad

ahmadadina56@gmail.com

BS Education, University of Malakand

Dr. Munir Khan

drmunirkhan71@gmail.com

Assistant Professor Department of Education University Of Malakand

Dr. Wahid Mahmood

anba07@yahoo.com

Department of education Northern University Nowshera

Shahbaz Jahangir

Shahbaz.bsed1909@uoch.edu.pk

MPhil Scholar, Institute of Education and Research University of Peshawar

Corresponding Author: Adina Ahmadahmadadina56@gmail.com

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ABSTRACT

The present study aims to draw comparisons between the extent of coverage of human health care content in the grade 6, 7 and 8 General Science books adopted by the Single National Curriculum (SNC, 2022). Although curriculum frameworks are supposed to take students from one year to another in a progressive way towards increased health literacy, there is no clear indication in Pakistan's elementary science curriculum of the gradual progression or a seemingly incoherent, inconsistent sequence of coverage. The study follows qualitative content analysis design and uses a structured checklist to the 5 selected categories of health i.e. Personal Hygiene, Food and healthy diet, Human Body systems, Disease prevention, and Health and lifestyle practices of the 3 textbooks of General science which were purposively selected as sample of the officially approved textbooks published by Khyber Pakhtunkhwa Textbook Board. Grade-wise scores are compared to see if the amount of coverage grows, stays the same or changes from Grade 6 to Grade 8. The results indicate that the overall rate of coverage is not linear with grade level 67 percent in Grade 6, 53 percent in Grade 7, and 73 percent in Grade 8, and that the most significant gap was in the complete lack of Food and Healthy Diet content in grade 7. The category of Human Body Systems is consistently covered with full marks and stable in all three grades; in other words, it is the only category that has a consistent coverage from grade to grade. There is consistent coverage from grade to grade in the category of Human Body Systems, while in the other two categories, Personal Hygiene and Health and Lifestyle Practices, the coverage is persistently weak from grade to grade. The comparison shows that the curriculum does not have a clear model of vertical progression for all health topics, and some topics are taught in one grade and not built upon over the course of the grades. The study suggests using a spiral format in curriculum design for the content of human health care for students in elementary grades so as to provide continuous and deepening exposure to students.

Keywords: *Comparative content analysis, curriculum progression, health care content, Single National Curriculum, General Science, elementary education, Pakistan.*

INTRODUCTION

A level of depth and complexity of content in curriculum frameworks is usually expected to increase with grade level, which is also known as a spiral curriculum (Morrish & Neesam, 2021). This expectation is especially true for health-related content, as health literacy is believed to be cumulative

by providing ongoing, reinforcing exposure to health information over time, not from a single, isolated grade, and not just from the health literacy course itself (Okan et al., 2021; Vamos et al., 2020). A single exposure to a health theme, in a single grade level, and never again is not enough to afford the reinforcement necessary for achieving lasting health literacy.

Necessary for achieving lasting health literacy. The first phase of this study found that although human health care content was present, it was moderately covered across the General Science textbooks of Grades 6-8 in SNC (2022) in Pakistan, but this analysis was done at the level of each grade. It is unclear whether the curriculum, when viewed as a three-year progression, provides students with a coherent and deepening introduction to health concepts, or whether there is inconsistent and disjointed coverage of health concepts across the grades. This has important implications for curriculum assessment: a curriculum based on health content may have a satisfactory overall average of content coverage for health, but it may be uneven, with strong coverage in one grade and weak in the next, as international comparative studies in curriculum have demonstrated, even in recently reformed competency-based curriculum (Morrish & Neesam, 2021).

The purpose of this study is therefore to investigate whether human health care coverage increases, remains constant, changes or decreases as students move through grades 6, 7 and 8 General Science textbooks as published in the SNC (2022). The comparison of the scores of the content areas and grades allows for the direct comparison between them, which may inform whether the curriculum is based on a conscious developmental sequence of health learning or health topics are more incidentally and randomly integrated into the curriculum chapter-by-chapter, a distinction that has direct implications for the extent to which the curriculum can effectively support the kind of durable, cumulative health literacy that is increasingly expected by international frameworks of science education (Paakkari & Okan, 2020).

Objective of the study

To compare the extent of human health care content coverage across Grade 6, 7, and 8 General Science

Research Question

How does the human health care content coverage differ across Grade 6, 7, and 8 General Science in the Single National Curriculum (2022)?

The Principle of Progression in Health Curriculum Design

The progression of health content throughout the grade levels is as crucial as the presence of health content in the curriculum, according to international research on curriculum. In an exploratory analysis of five national curriculum frameworks, Morrish and Neesam (2021) noted that the various countries in the sample vary significantly in the amount of health content, as well as in how content is presented and developed across the grades in the curriculum. Countries may either broaden topics as students progress through the grades (e.g., from personal cleanliness to community sanitation) or simply repeat the same "baseline" message without developing it further. The same claim is made by Okan et al. (2021) that health literacy in children and youth is a product of cumulative reinforced exposure, so that curricula that expose one idea per grade and then move on are not likely to result in long-term competency. The conceptual framework for the comparison of coverage (not merely description) of Grades 6, 7, and 8 in this study is provided by this body of research.

Comparative Evidence of Inconsistent Progression

Similar inconsistencies have been noted in other textbook-based studies based on a comparison. A comparison with similar studies elsewhere using textbooks has been documented as well. Aldossari (2021) revealed that the coverage of health education concepts in the textbooks was less uniform

across the different content areas, and in every case, the more common content domains in U.S. and Singapore textbooks were those related to disease, as opposed to nutrition and lifestyle, across the grades. One relevant conclusion that Metwally et al. (2024) drew from their comparison of science textbooks in China and Egypt is that the way the science content is organised within the chapters and units of the textbooks has a direct impact on the depth and consistency with which the content is treated — a conclusion that resonates with the question of why a theme like nutrition might be covered in great detail in one grade and completely omitted in the next. Fragmented progression appears to be not specific to a particular education system, but a common issue in the way health content is embedded in science learning across countries.

The Pakistani Context

Existing assessments of the SNC have focused on its structural coherence (Farooq et al., 2022) and its coverage of religious content in the curriculum across grade levels (Tayyab et al., 2022), but neither of these have studied the grade-wise progression of the health content. The direct relevance of knowing whether the SNC's General Science curriculum reinforces health learning progressively or not, or leaves it fragmented, lies in the fact that school children in Pakistan have been documented as having health vulnerabilities such as malnutrition-linked stunting (Pakistan Institute of Education, 2024) and that school-based health education outside the formal curriculum has been described as limited and largely didactic (Khan et al., 2025). That is why this comparative study is important.

RESEARCH DESIGN

In this study, qualitative, comparative content analysis design is used. The comparative aspect of this design in particular allows for a grade to grade assessment of the amount of health content across the elementary sequence to determine if coverage is increasing, decreasing, or remaining constant.

Population of the Study

The population includes all General Science textbooks prepared in SNC (2022) for elementary level (Grades 6-8) from Pakistan.

Sample and Sampling Technique

The three General Science textbooks selected for the purpose of the study were the officially approved textbooks published by Khyber Pakhtunkhwa Textbook Board (KPTB) using purposive sampling technique and these were for Grades 6, 7, and 8. This selection enables comparison directly from grade to grade throughout the entire elementary program with the current, official editions.

Research Instrument

The same structured content analysis checklist was used as in the descriptive phase of this research with five categories scored 0-3 per grade: Personal Hygiene, Food and Healthy Diet, Human Body Systems, Disease Prevention, and Health and Lifestyle Practices.

Data Collection Procedure

The textbooks were examined on a chapter-by-chapter basis and health-related chapters were coded by their respective chapter. For comparison, scores were tallied grade by grade and percentage coverage was determined for each grade and for the three-grade sequence.

Data Analysis Technique

Comparative thematic content analysis was used to analyze the data. This analysis also looked at how the scores for each category changed between Grade 6 and Grade 7 and Grade 8, categorizing the

trajectory of each category as progressive (increasing coverage), fluctuating (inconsistent, non-linear coverage), stable (constant coverage), or absent/declining.

RESULTS

Grade-wise Comparison of Overall Coverage

Table 1 *Comparative Overall Coverage Across Grades*

Grade	Score (/15)	Percentage
Grade 6	10	67
Grade 7	8	53
Grade 8	11	73

The overall coverage is not necessarily ascending from grade 6 to grade 8. Rather, it has a dip-and-recover trend: from Grade 6 to Grade 7, it drops 14 percentage points; from Grade 7 to Grade 8, it gains 20 percentage points. This is an indication that overall the curriculum is not consistently cumulative in the delivery of health content.

Category-wise Comparison and Trajectory Classification

Table 2 *Category-wise Scores and Trajectory Across Grades 6-8*

Category	Grade 6	Grade 7	Grade 8	Trajectory
Personal Hygiene	1	1	2	Gradual improvement (weak base)
Food and Healthy Diet	3	0	2	Sharp fluctuation / discontinuity
Human Body Systems	3	3	3	Stable (full coverage)
Disease Prevention	2	3	2	Fluctuating (peak in Grade 7)
Health and Lifestyle Practices	1	1	2	Gradual improvement (weak base)

One category, Human Body Systems, has a completely stable trajectory, with maximum coverage in each grade level. In Food and Healthy Diet, the trajectory is most disruptive with full coverage in Grade 6, followed by complete absence at Grade 7, and a partial recovery at Grade 8, directly disrupting rather than building on vertical progression. The trend of Disease Prevention is not linear, but rather peaks in Grade 7. The Personal Hygiene and Health and Lifestyle Practices sequences in all

have a low base level in Grade 6 and a still modest peak in Grade 8, with weak but slowly improving sequences overall, suggesting slow improvement but not strong coverage at any point in the sequence.

SUMMARY OF COMPARATIVE FINDINGS

At all three grades, only a small proportion of subjects (20 percent) have a well established pattern of coverage, with no patterns in any other category. The remaining four categories indicate either variable or discontinuous or consistently low trajectories; the most serious example of curricular discontinuity observed in this comparison is the situation regarding Food and Healthy Diet.

DISCUSSION

This comparative analysis reveals that the coverage of human health care topics in the SNC (2022) General Science curriculum is not progressive and steadily deepening in Grades 6, 7 and 8, but rather affects the topics at random, which contradicts the model of health literacy development that is proposed in the international literature (Vamos et al., 2020; Okan et al., 2021). This drop and rise in overall coverage from 67 percent in Grade 6 to 53 percent in Grade 7, and then to 73 percent in Grade 8, is significant and can be attributed to the complete absence of Food and Healthy Diet content in Grade 7, which is a discontinuity that in itself is illustrative of the type of non-cumulative curriculum design that Morrish and Neesam (2021) warn about in their comparative review of national curriculum frameworks. While a well-sequenced spiral or progressive curriculum builds on and adds to the nutrition concepts that are introduced, the SNC seems to completely overlook the theme for a full year of schooling before it comes back again, but in a different form, in Grade 8. In contrast, the stability of Human Body Systems in all three grades indicates that the curriculum is able to provide strong and consistent coverage when content is closely linked to the traditional disciplinary structure of science, as found by Aldossari (2021) for content that is related to anatomy. The relatively weaker and less consistent paths of Personal Hygiene, Health and Lifestyle Practices and Disease Prevention imply that the themes are utilized as supplementary material added to individual chapters and are not intentionally woven throughout the three-year sequence, as also noted by Metwally et al. (2024) when comparing the impact of content organization on topic depth and consistency between grade-levels in science textbooks. The results are significant, as health literacy is believed to need continuous reinforcement and cumulative exposure rather than single-grade instruction (Nash et al., 2018) and because Pakistani school children are known to be at health risk (Pakistan Institute of Education, 2024) and school-based health education outside the formal curriculum is limited (as stated earlier in this paper by Khan et al., 2025). A nutrition curriculum that lacks content for an entire grade or whose grade-level prevention efforts are highest in just one year is likely to leave gaps in student knowledge at just the time that important health habits are being established. The comparative evidence that has been collected here also indicates a need for more health content, and in particular, more consistent, purposefully sequenced health content throughout the elementary General Science curriculum.

CONCLUSION

The results are significant, as health literacy is believed to need continuous reinforcement and cumulative exposure rather than single-grade instruction (Nash et al., 2018) and because Pakistani school children are known to be at health risk (Pakistan Institute of Education, 2024) and school-based health education outside the formal curriculum is limited (as stated earlier in this paper by Khan et al., 2025). A nutrition curriculum that lacks content for an entire grade or whose grade-level prevention efforts are highest in just one year is likely to leave gaps in student knowledge at just the time that important health habits are being established. The comparative evidence that has been collected here also indicates a need for more health content, and in particular, more consistent, purposefully sequenced health content throughout the elementary General Science curriculum. The present study aimed to compare the content coverage of human health care in the General Science books of students of grade 6, 7, and 8 of Pakistan's Single National Curriculum (2022) and observed that the coverage was not coherent and progressively deepening in the sequence of the elementary

classes. Overall coverage, however, varies, dropping in Grade 7 and rising in Grade 8, with the lowest coverage in the Food and Healthy Diet content being that of this grade, where the content was not covered in Grade 7 at all following strong coverage in Grade 6. Only Human Body Systems had a consistently flat score at all three grade levels; Personal Hygiene and Health and Lifestyle Practices were weak and showed no improvement as the grade level increased; and Disease Prevention was strong in one grade but not building as the grade level increased. The results suggest that there is reasonable content in individual grade levels but the curriculum as a three-year sequence is not necessarily a deliberate progression in the development of health literacy needed at the end of the three years. The need to enhance the consistency and continuity of human health care content in the elementary General Science curriculum, however, should be considered a separate and essential goal of future revision, rather than the mere addition of more human health care content.

RECOMMENDATIONS

- **The health content is designed to follow a spiral curriculum model.** The topics of health, such as Food and Healthy Diet and Health and Lifestyle Practices, should be intentionally revisited and deepened in all grades and not be fully covered in one grade and then in another.
- **Eliminate curricular discontinuities in nutrition content.** Remove disconnections in nutrition content across the curriculum. The lack of Food and Healthy Diet material in Grade 7 should be remedied by providing a specific nutrition component throughout each textbook, that builds upon previously introduced material.
- **Distribute Disease Prevention content more evenly across grades.** To support learning in a progressive manner, curriculum developers should spread out the basic and high-level aspects of disease prevention throughout all three grades, instead of focusing all the disease-related content in one grade (currently Grade 7).
- **Establish minimum coverage benchmarks per category, per grade.** It is important that each textbook offer a minimum amount of content in each health category at each grade level, so that the content in categories like Personal Hygiene is not consistently weak throughout the elementary sequence.

FUTURE RESEARCH RECOMMENDATIONS

- **Track health content progression into secondary and higher secondary grades.** Future research should continue this comparative study in grades 9-12 to see if the disjointed progression observed in elementary grades continues, leveling off or getting even better in later grades.
- **Investigate the causes of curricular discontinuity through curriculum-developer interviews.** Interviews with the individuals who created text materials used in textbooks and curriculum development for the SNC process could be conducted in future research to see why certain health themes are not represented in some levels of school.
- **Compare vertical progression across provincial textbook boards.** As there are slight differences in the textbooks across the provinces, it would be beneficial to conduct future studies on the consistency of the progression of health content across the various provincial boards and see if the discontinuities observed in this study are from a particular publisher or part of the national curriculum.
- **Assess whether inconsistent progression affects measurable student health literacy outcomes.** Qualitative research could be conducted to explore how students who are exposed to the health knowledge gaps and discontinuities seen in the Grade 7 curriculum are affected

by those exposures. Qualitative research could follow a longitudinal or quasi-experimental design, to evaluate whether there are measurable gaps between students taught and other students in the same grade taught using more consistent coverage.

REFERENCES

- Aldossari, A. T. (2021). Health education concepts in school biology textbooks in the United States and Singapore. *EURASIA Journal of Mathematics, Science and Technology Education*, 17(5), 1961.
- Farooq, M., et al. (2022). Content based evaluation of Single National Curriculum framework of Pakistan. *Journal of Research and Reviews in Social Sciences Pakistan*, 5(2), 1829-1839.
- Khan, M. S., Almas, A., Samad, Z., Zimmerman, K. O., & Ali, T. S. (2025). Acceptability, feasibility, and perceived usefulness of the School eHealth Education Program Pakistan (eSHEPP) for improving adolescents' awareness of noncommunicable diseases in secondary and higher secondary schools. *Research Square*.
- Krippendorff, K. (2018). *Content analysis: An introduction to its methodology* (4th ed.). Sage.
- Metwally, A. H. S., Tlili, A., Wang, Y., Li, Z., Zhao, J., Shehata, B., Yang, D., & Huang, R. (2024). How do Chinese and Egyptian science textbooks differ? A cross-country comparative research. *Heliyon*, 10(12), e32380.
- Morrish, D., & Neesam, M. (2021). Trends in coverage of hygiene and disease prevention topics across national curriculum frameworks for primary science, physical education, and health. *Prospects*, 51(4), 363-381.
- Nash, R., Elmer, S., Thomas, K., et al. (2018). HealthLit4Kids study protocol: Crossing boundaries for positive health literacy outcomes. *BMC Public Health*, 18(1), 690.
- Okan, O., Bollweg, T. M., & Bröder, J. (2021). Health literacy in childhood and adolescence: An integrative review. In L. A. Saboga-Nunes, U. H. Bittlingmayer, O. Okan, et al. (Eds.), *New approaches to health literacy* (pp. 45-64). Springer.
- Paakkari, L., & Okan, O. (2020). COVID-19: Health literacy is an underestimated problem. *The Lancet Public Health*, 5(5), e249-e250.
- Pakistan Institute of Education. (2024). *Pakistan Education Statistics 2023–24*. Ministry of Federal Education and Professional Training.
- Tayyab, M., Umer, S., & Sajid, A. (2022). Decoding religious contents of Grade 5th textbooks of Single National Curriculum (SNC) in Pakistan. *Pakistan Journal of Humanities and Social Sciences*.
- Vamos, S., Okan, O., Sentell, T., & Rootman, I. (2020). Making a case for "education for health literacy": An international perspective. *International Journal of Environmental Research and Public Health*, 17(4), 1-18.