



COMMUNITY KNOWLEDGE, ATTITUDES, AND PRACTICES ON SEA TURTLE CONSERVATION IN MADIHA AND POLHENA, SRI LANKA

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The global sea turtle population is threatened due to anthropogenic activities. The coastline of Sri Lanka, including Madiha and Polhena beaches, provides critical habitats for five species of sea turtles. Their popularity as tourist destinations further highlights the need for effective conservation in these areas. This study aimed to assess the influence of demographic factors on knowledge, attitudes, and practices (KAP) of the local community of these areas towards sea turtle conservation. A mixed-methods survey was conducted among 100 locals from Madiha and Polhena, selected through random sampling and categorized into three age groups: 18-30 years (33%), 31-50 years (34%), and 51-70 years (33%). A structured questionnaire, validated through a pilot study ($n=40$), including 19 items assessing demographics (5), knowledge (7), attitudes (3), and practices (4) of locals regarding sea turtle conservation was used for data collection. Informed consent was obtained from all participants before data collection. Data were analysed using the software IBM SPSS Statistics Version 20, converting responses into numerical scores. KAP scores were calculated by summing the respective items. The data were analysed using descriptive statistics, Chi-square, Mann-Whitney U, Kruskal-Wallis, Spearman's correlation, and regression analyses. $p < 0.05$ was set as the statistical significance. The structured questionnaire demonstrated strong validity and reliability (Internal validity, Cronbach's $\alpha=0.785$; CVR=1.00; Face validity, Kappa=0.689, $p=0.002$; 73.8% of variance indicated by PCA). The older age group (51-70) had a significantly higher knowledge level (mean = 7.88 ± 2.10 , $p=0.006$) compared to other groups. Gender-based assessment of knowledge and attitude scores showed that males possessed higher knowledge (mean 8.26 ± 2.29 , $p<0.0001$) and more positive attitudes ($p=0.007$) than females. Both the old age group ($p=0.026$) and the long-term residents ($p=0.001$) showed greater knowledge about sea turtles at Madiha and Polhena. Moreover, both knowledge ($\beta=0.45$, $p=0.004$) and attitudes ($\beta=0.39$, $p=0.007$) significantly predicted conservation practices. Higher knowledge (OR=2.3, $p=0.004$) and positive attitudes (OR=1.9, $p=0.007$) contributed to the willingness to participate in sea turtle conservation. Knowledge and attitudes showed a greater influence on enhancing conservation practices among the local residents. Raising awareness among young individuals, females, and new residents may support community-based sea turtle conservation at Madiha and Polhena areas.

Keywords: sea turtle conservation, knowledge, attitudes, and practices (KAP), Sri Lanka, Madiha and Polhena, community-based conservation

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INTRODUCTION

Marine turtles are reported to inhabit the wide ocean over 190 million years (Rathnayake, 2016). Seven species belonging to Cheloniidae and Dermochelyidae families are the only members known to be surviving present day (Meylan & Donnelly, 1999). Despite their greater importance to human and marine biodiversity, overexploitation and habitat degradation have become serious threats, causing sea turtle population decline (Mittermeier et al., 2015). Sri Lanka is a home to five sea turtle species, visiting South, West, and Southeast sandy beaches for nesting and egg laying process, which are composed of sea grass beds and coral reefs (Maldeniya, 2014; Jayathilaka et al., 2017). Madiha and Polhena coastlines, well known as a major tourist attraction site in the Southern Province of Sri Lanka, host more than fifteen green turtles (Polhena Diving Center, 2020) and several other species that occasionally visit the beach, are facing threats such as egg predation, illegal sea turtle egg trading, plastic pollution, and fishing net entanglement. This mini project aims to assess the knowledge, attitudes, and practices (KAP) of the local community towards sea turtle conservation and to investigate the influence of demographic factors (age, gender, education level and years of residency at Madiha/Polhena) on sea turtle conservation. The study was specifically conducted to explore the key demographic factors influencing knowledge, attitudes, and practices towards sea turtle conservation among local communities of Madiha and Polhena coastlines, Matara, Sri Lanka.

METHODOLOGY

Study Design

The study area encompassed the two adjacent coastal villages Madiha and Polhena located in the Southern coastline of Sri Lanka. A total of 100 participants were selected through random sampling and categorized into three age groups (18-30, 31-50, 51-70). The study employed a mixed-method approach. The data from the participants were collected using a structured questionnaire including multiple choice questions, Likert scale and open-ended questions regarding knowledge, attitudes and practices of the local community. The questionnaire was prepared in Sinhala language where the reliability and validity of the study were established by conducting a pilot study of 40 participants.



Data Analysis

For the questionnaire validation, face validity, content validity ratio (CVR), test-retest reliability, correlation analysis and principal component analysis (PCA) were employed. Both quantitative and qualitative data collected in pilot study and main study were given numerical scores, separately (Yes=1/ No=0) and analyzed using IBM SPSS Statistic Version 20. Knowledge score, attitude score, and practice score were calculated by summing up the knowledge variables, attitude variables, and practice variables (KAP scores), respectively. Demographics (age group, gender, educational level, years of residency at Madiha/Polhena) and KAP scores were summarized using descriptive statistics. Chi-square test was employed to assess the association between genders. KAP scores included ordinal variables; therefore, non-parametric tests were employed. For gender comparison, the Mann-Whitney U test was employed. The comparisons among age groups, educational levels, and years of residency were done using Kruskal-Wallis H test. The relationships between KAP scores and the relationships between different age groups, educational level, period of living at Madiha/Polhena were established using Spearman's correlation. The predictors of KAP scores were identified using the multiple linear regression analysis. To investigate the role of knowledge and attitudes in local community's willingness to participate in sea turtle conservation activities, the binary logistic regression was employed. $p < 0.05$ was set as the statistical significance.

RESULTS AND DISCUSSION

The structured questionnaire demonstrated a strong validity and reliability. Reliability measures indicated acceptable test-retest reliability (Cronbach's alpha= 0.785) with a moderate interclass correlation (ICC= 0.335, $p < 0.001$). Internal consistency measures were satisfactory as well (Cronbach's alpha= 0.559) with regard to the questionnaire validity; face validity was supported (Kappa=0.689, $p = 0.002$) and content validity was confirmed (CVR=1.00). Principal Component Analysis (PCA) identified five factors explaining 73.8% variance. Altogether, the questionnaire demonstrated satisfactory validity and reliability values, confirming its suitability to be used among the study population. The main study employed 100 participants distributed across 18-30 (33%), 31-50 (34%), and 51-70 (33%), respectively. Of the total population, 49% were males and 51% were females. A significant association between age group and knowledge about sea turtle species was revealed through the chi-square test ($p=0.006$) with the older age group representing the highest knowledge. A significant difference in knowledge and attitude scores by gender was revealed through the Mann-Whitney U test where males exhibited significantly higher knowledge ($p=0.000$) and positive attitudes ($p=0.007$) than females. Kruskal-Wallis test results showed a significant difference in knowledge scores by age group ($p= 0.026$), and years of residency at Madiha/Polhena ($p=0.001$) demonstrating that old age people and long-term residents had more knowledge



on sea turtles at Madiha/Polhena. KAP scores were positively correlated. Multiple linear regression highlighted that knowledge ($\beta=0.45$, $p=0.004$) and attitudes ($\beta=0.39$, $p=0.007$) play a significant role in predicting practices among the participants. Higher knowledge ($OR=2.3$, $p=0.004$) and positive attitudes ($OR=1.9$, $p=0.007$) were identified as the major factors contributing towards the significant increase in the willingness to participate in sea turtle conservation programmes as revealed through the binary logistic regression analysis.

Table 1: Mean knowledge, attitude and practices (KAP) scores across different age groups and genders
(differences within each variable, -: $*p=0.05$)

Demographic	Categories	Percentage	Mean Knowledge Score (Mean $\pm$ SD)	Mean Attitude Score (Mean $\pm$ SD)	Mean Practice Score (Mean $\pm$ SD)
Age Group	18-30	33%	6.58 $\pm$ 1.66 ^a	4.88 $\pm$ 0.65	3.24 $\pm$ 0.94
	31-50	34%	6.82 $\pm$ 2.53 ^a	4.79 $\pm$ 0.54	3.12 $\pm$ 1.09
	51-70	33%	7.88 $\pm$ 2.10 ^b	4.89 $\pm$ 0.42	3.15 $\pm$ 1.12
Significance Level			0.026*	0.754	0.990
Gender	Male	49%	8.26 $\pm$ 2.29 ^b	5.00 $\pm$ 0.54 ^b	3.37 $\pm$ 0.90
	Female	51%	5.96 $\pm$ 1.33 ^a	4.71 $\pm$ 0.50 ^a	2.98 $\pm$ 1.14
Significance Level			0.000***	0.007**	0.067
Educational Level	Grade 6 to O/Ls	33%	7.76 $\pm$ 2.48	4.82 $\pm$ 0.58	3.00 $\pm$ 1.11
	A/Ls	59%	6.88 $\pm$ 2.00	4.81 $\pm$ 0.50	3.17 $\pm$ 1.01
	Degree	8%	5.87 $\pm$ 1.55	5.25 $\pm$ 0.46	3.87 $\pm$ 0.64
Years of Residency at Madiha/ Polhena	1-10 Years	4%	3.50 $\pm$ 1.00 ^a	4.75 $\pm$ 0.50	2.75 $\pm$ 1.50
	>10 Years	96%	7.24 $\pm$ 2.09 ^b	4.85 $\pm$ 0.53	3.19 $\pm$ 1.03
Significance Level			0.001**	0.729	0.561



Table 2: Summary of Regression analyses on factors influencing conservation practices and willingness to participate

Regression Type	Outcome variable	Predictor Variable	Coefficient/OR	p value	Interpretation
Multiple Linear Regression	Conservation Practices (Scores)	Knowledge	$\beta = 0.45$	0.004	Higher knowledge significantly predicts better conservation practices
		Attitudes	$\beta = 0.39$	0.007	Positive attitudes significantly predict better conservation practices
Binary Logistic Regression	Willingness to participate (Yes/No)	Knowledge	OR= 2.3	0.004	Participants with higher knowledge are 2.3 times more willing to participate
		Attitudes	OR= 1.9	0.007	Positive attitudes increase willingness to participate by 1.9 times

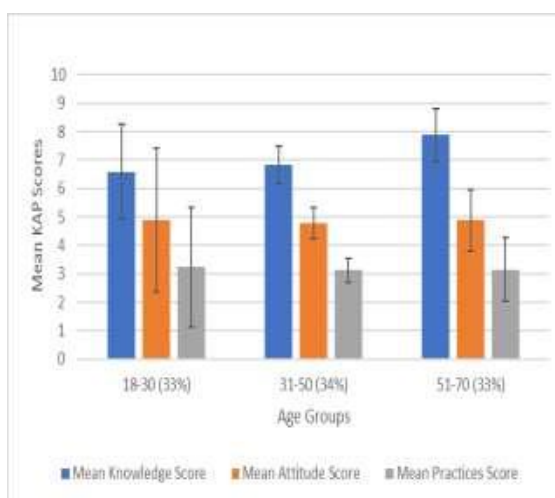


Figure 1: Comparison of mean KAP scores across age groups

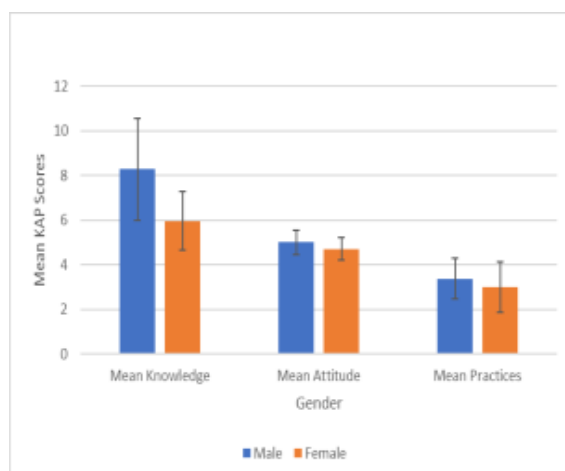


Figure 2: Comparison of mean KAP scores across gender

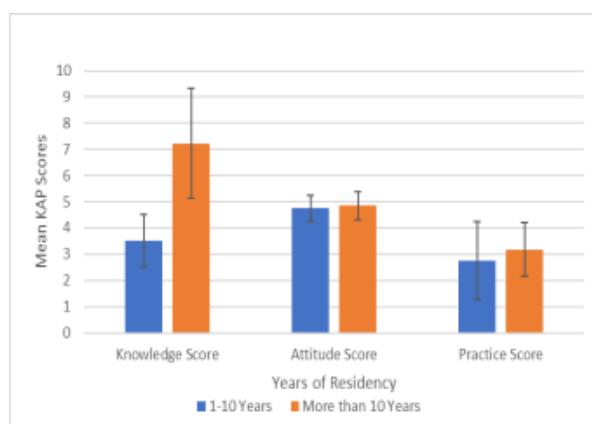


Figure 3: Comparison of mean KAP scores across years of residency

It is evident that educational programmes and raising awareness of the local community, particularly the younger individuals, females and new residents will be positively influencing on enhancing community engagement in sea turtle conservation along madiha/polhena coastlines.



CONCLUSIONS/RECOMMENDATIONS

This study reveals the importance of knowledge and attitudes in improving conservation practices. Strengthening the local awareness of sea turtle species, their conservation status and their ecological importance can improve better conservation behaviours of the local community ensuring long term survival of the sea turtles along Madiha/Polhena coastline.

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