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A STUDY ON ASSESSMENT OF KNOWLEDGE ATTITUDE AND AWARENESS REGARDING URINARY TRACT INFECTION AMONG COLLEGE STUDENTS IN TUMKUR REGION

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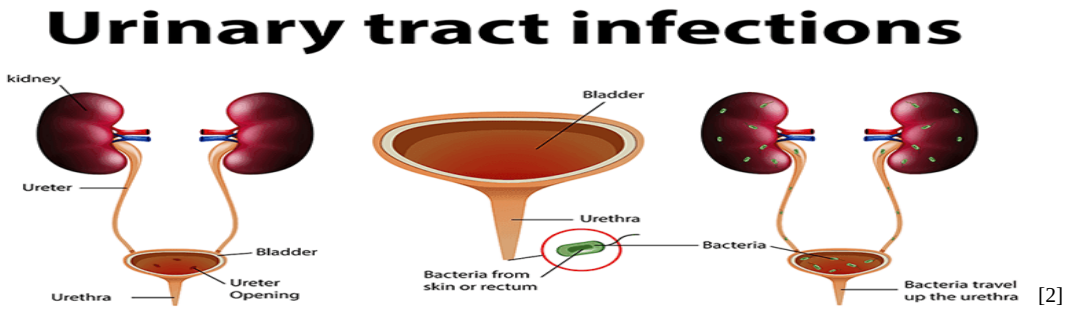
ABSTRACT

Urinary tract infection is defined as the presence of microorganism in the urinary tract that cannot be accounted for by contamination. The organism present have the potential to invade the tissues of the urinary tract. **Objective:** The study aims to evaluate and carry out the assessment o Knowledge, Attitude and Awareness regarding urinary tract infections among college students in Tumkur region. **Methodology:** a cross sectional observational study was carried out for three months in various college in Tumkur region by using self-prepared Questionnaire study was conducted in online survey by creating Google form. **Results:** As a result, Total 265 college students have participated during the study period. Assessed the participants according to gender wise, Age, Marital status, Year of studying, Residential area, where they lives with, Knowledge, Attitude and Awareness components among the participants. Out of 265, 101(38.11%) are males and 164(61.88%) are females. The majority of participants were in the age group are 18-20 are 143(53.96%), Most of participants according to Marital status are unmarried shows 262(98.86%). The majority of participants according to Year of studying belongs to first year shows 98(36.98%) most of the participants according to residential area belongs to Town are 179(67.985), The majority of participants according to where they lives

with belongs to hostel are 119(44.90%), most of the participants according to Assessment of knowledge reveals that showing poor knowledge category are 121(45.66%). Bases on Assessment of Attitude, majority of the participants shows that good attitude category are 143(53.96%) and finally assessed the awareness components among the participants. **Conclusion:** Our study conclude that many students lack adequate knowledge about UTI's their causes symptoms and prevention strategies. So, this study suggests implementing health education programs and awareness programs that focus on UTI can help bridge knowledge gaps and promote healthy behaviors. Educating them regularly would improve their current level of knowledge and makes them complete enough for the public health services. So, suggesting accessible and confidential health services on camps can encourage students to seek medical attention when needed.

Definition

A UTI is defined as the presence of microorganism in the urinary tract that cannot be accounted for by contamination. The organisms present have the potential to invade the tissues of the urinary tract.[1]

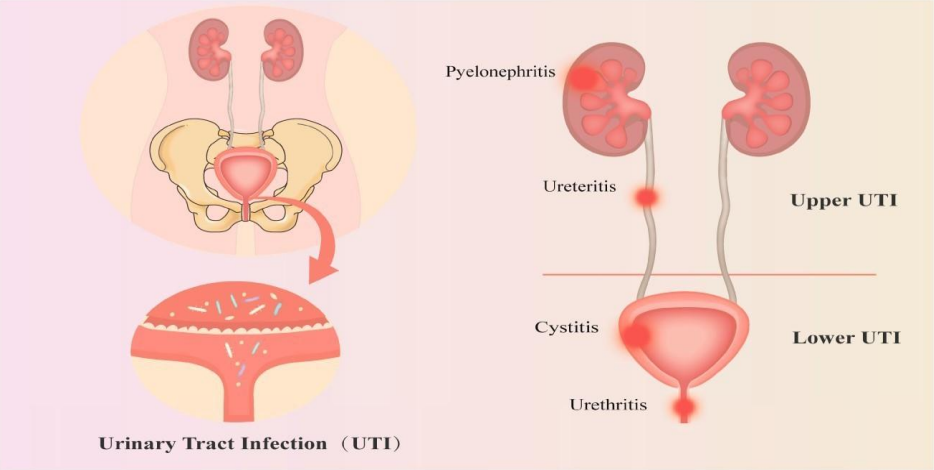


[2]

Figure 1: Urinary Tract Infection.

Classification of UTI[1]

1. **Lower UTI's**: lower UTI is corresponds to cystitis (bladder).
2. **Upper UTI's**: Upper UTI correspond to the pyelonephritis (an infection involving the kidneys).



[3]

Figure 2: Classification of UTI.

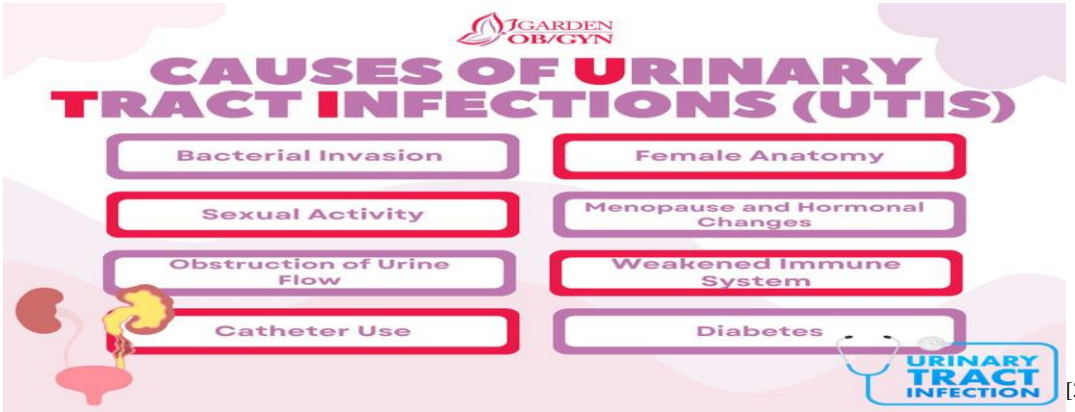
ETIOLOGY[5]

1. Bacterial infection: The microbial etiology of urinary infections has been regarded as well established and reasonably consistent. Escherichia coli remains the predominant uropathogen (80%) isolated in acute community-acquired uncomplicated infections, followed by Staphylococcus saprophyticus (10% to 15%). Klebsiella, Enterobacter, and Proteus species and enterococci infrequently cause uncomplicated cystitis and pyelonephritis.

2. Host factors: The etiology of UTI is also affected by underlying host factors that complicate UTI, such as age, diabetes, spinal cord injury, or catheterization.

3. Sexual intercourse: Sexual intercourse can push bacteria into the urethras, increasing the risk of UTI's, especially in women.

4. Incomplete bladder emptying: Individuals with the weakened immune systems are more susceptible to infections including UTI's.



[2]

Figure 3: Etiology of UTI.

Clinical Manifestations (signs and symptoms)[6]

UTIs don't always cause symptoms. When they do, they may include: Each type of UTI may result in more specific symptoms. The symptoms depend on which part of urinary tract is affected.

Table 1: Signs and Symptoms of UTI.

Part of urinary tract	Signs and symptoms
Kidney	• Back or side pain • High fever • Shaking and chills • Nausea • Vomiting
Bladder	• Pelvic pressure • Lower belly discomfort • Frequent, painful urination • Blood in urine
Urethra	• Burning with urination • Discharge
Other symptoms	• Strong smell during urinating • Strong urgr for urinating.

Pathogenesis[1]

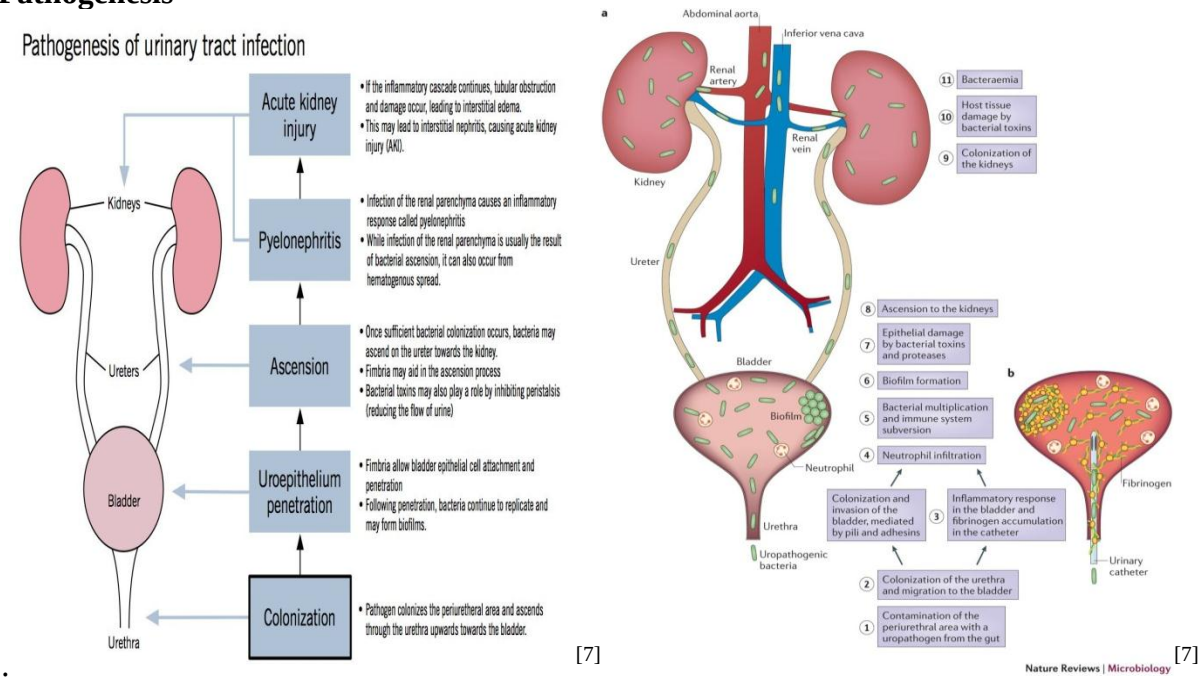


Figure 4: Pathogenesis of UTI.

Diagnosis[8]

1. **Urinalysis**: This test will examine the urine for red blood cells, white blood cells and bacteria. The number of white and red blood cells white blood and red blood cells found in your urine can actually indicate an infection.
2. **Urine culture**: A urine culture is used to determine the type of bacteria in your urine. This is an important test because it helps determine the appropriate treatment.
3. **Ultrasound**: In this test, sound waves create an image of the internal organs. This test is done on top of your skin, is painless and doesn't typically need any preparation.
4. **CT scan**: Another imaging test a CT scan is a type of X-ray that takes cross sections of the body (like slices). This test is much more precise than typical x-rays.

Treatment

Non pharmacological treatment[9]

- **Hydration:** It plays a important role in preventing of UTI. It flushes out bacteria and dilutes urine which helps in preventing bacterial adhesion.
- **Cranberry juice:** Prevents bacterial adhesion and reducing bacterial colonization. Consuming cranberry juice for 1-2 days which helps in reducing the mild UTI.
- **D Mannose sugar:** It acts on binding to bacteria and which prevent bacterial adhesion to the urinary tract and leads to flushing out of bacteria which helps to prevent reduced UTI. To treat UTI 1.5 grams once daily for 3 days and once daily for 100 days.
- **Pro-biotic:** Pro-biotics are the live organism that provides health benefits when consumed generally by improving or restoring the gut health.
- **Urinary tract health:** Maintain of urinary tract health includes focusing on staying hydration, practicing good hygiene and emptying bladder regularly.
- **Heat application:** It helps in relieving the pain by relaxing the muscles and increasing blood flow.
- **OTC pain reliever:** OTC pain relievers like ibuprofen and acetaminophen are used. It reduces the inflammation and reduces the pain.
- **Life style:** Maintaining proper life style like exercise and proper hygiene helps in reducing the UTI. Maintaining proper hygiene also imp.

Pharmacological treatment[10]

Table 2: Pharmacological treatment of UTI.

Drug	Dose and duration	Common adverse effects
Recommended agents		
Nitrofurantoin monohydrates / macrocrystals	100mg twice daily for 5D	Nausea, Headache
Tri methoprimsulfamethoxazole	160/800 mg (1DS tablet) twice daily for 3d	Rash, Urticaria, Nausea, Vomiting, Hematologic signs
Fosfomycin trometamol	3-g single dose sachet	Diarrhea, Nausea, Headache
Alternative agents		
β lactams	Dose varies by agent; 5-to7-d regimen	Diarrhea , Nausea, Vomiting, Rash, Urticaria
Fluroquinolones	Dose varies by agent 3-d regimen	Nausea, Vomiting, Diarrhea, Headache, Drowsiness, Insomnia, Tendon, Rupture, Neuropathy

Preventive measures[11]

- Empty your bladder soon after having sex.
- Wipe from front to back.
- Drink plenty of liquids, especially water.
- Try cranberry juice.
- Avoid potentially irritating feminine products**.**

METHODOLOGY

MATERIALS AND METHODS

- **Study design**: Cross sectional observational study.
- **Study site**: Study will be carried out in students of various colleges in Tumkur region. The study was conducting using an online survey creating on Google forms.
- **Proposed sample size**: More than 250 participants from various colleges in Tumkur region.
- **Duration of study**: The study will be conducting for period of 3 months.
- **Date collection methods**: The data for this study was collecting through questionnaires administered to the participants The questionnaires were designed specially for this study to across the level of knowledge awareness and attitude towards UTI among the population The question were developed based on **current literature, guidelines and expert opinions in the field.**

- **Statistical method**: Data will be represented graphically and analyzed using statistical method like MS excel sheet.
- **Materials used** : 1)Informed consent from
  2) Self-prepared Questionnaire
  3) Patient information leaflet (PIL)
- **Study criteria**: The study will be carried out by considering the following inclusion and exclusion criteria.

Inclusion Criteria	Exclusion criteria
▪ All the participants having >18 years of age ▪ Participants who are willing to give informed consent form (ICF) to participants in study ▪ Participants of either gender All the participants from Tumkur region various colleges.	▪ Participant of <18 years of age ▪ Participants who are not willing to give informed consent from (ICF) to participate in study

RESULTS

A cross- sectional observational study was conducted among various college students in the Tumkur region, Karnataka.

A total number of 265 college students have participated during the study period.

Table 03: Distribution of participants according to gender wise Out of 265 101(38.11%) were males, 164(61.88%) were females.

Sl.no	Gender	Number of participants	percentage
1.	Males	101	38.11%
2.	Females	164	61.88%

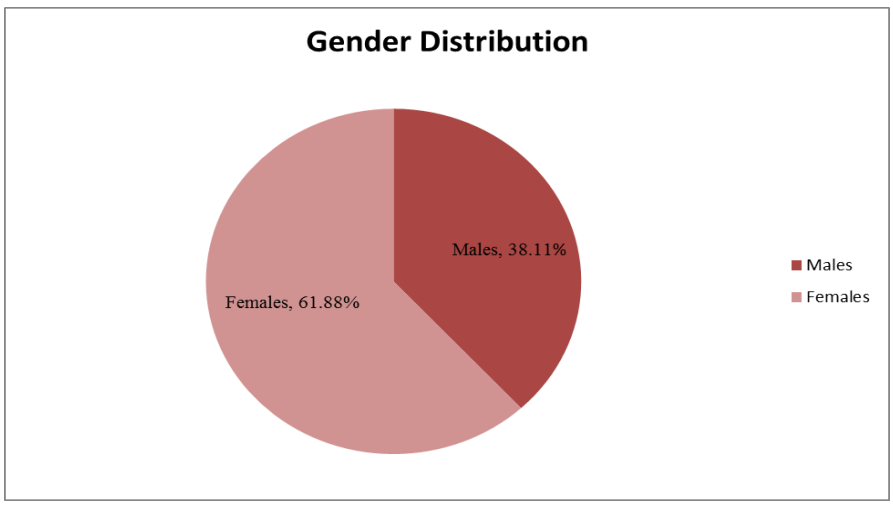


Figure 5: Distribution of students according to gender wise.

Table 04: Distribution of participants according to age.

Sl.no	Age	Males	Females	Total number of participants	Total percentage
1.	18-20	48(47.52%)	95(57.92%)	143	53.96%
2.	21-22	37 (36.63%)	63(38.41%)	100	37.73%
3.	23-24	12 (11.88%)	6(3.65%)	18	6.79%
4.	>24	4 (3.98%)	0(0%)	4	1.5%
5	Total	101	164	265	100%

Out of 265 participants, Our study found the highest number of students participated age group is 18-20 years 53.96%(143), then followed by 21-22 37.73%(100) participants, 23-24 6.79%(18)and age group >24 are 1.5%(4).

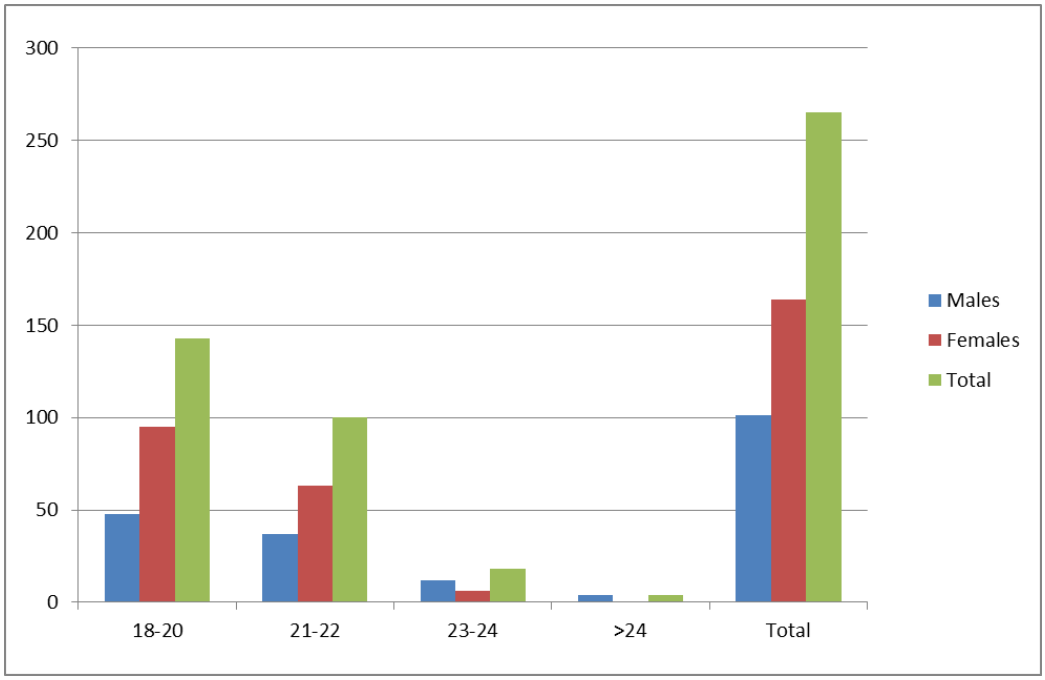


Figure 6: Distribution of participants according to Age.

Table 05: Distribution of participants according to Marital status.

Sl. no	Marital status	Males		Females		Total	
		Number of participants	Percentage	Number of participants	Percentage	Number of participants	Percentage
1	Married	1	0.99%	2	1.21%	3	1.13%
2	Unmarried	100	99.1%	162	98.78%	262	98.86%
	Total	101	100%	164	100%	265	100%

Among 265 participants According to marital statusmarried people are 3 in that males were 1 and females were 2and unmarried are 262(98.86%) in that males were 100 and females were 162.

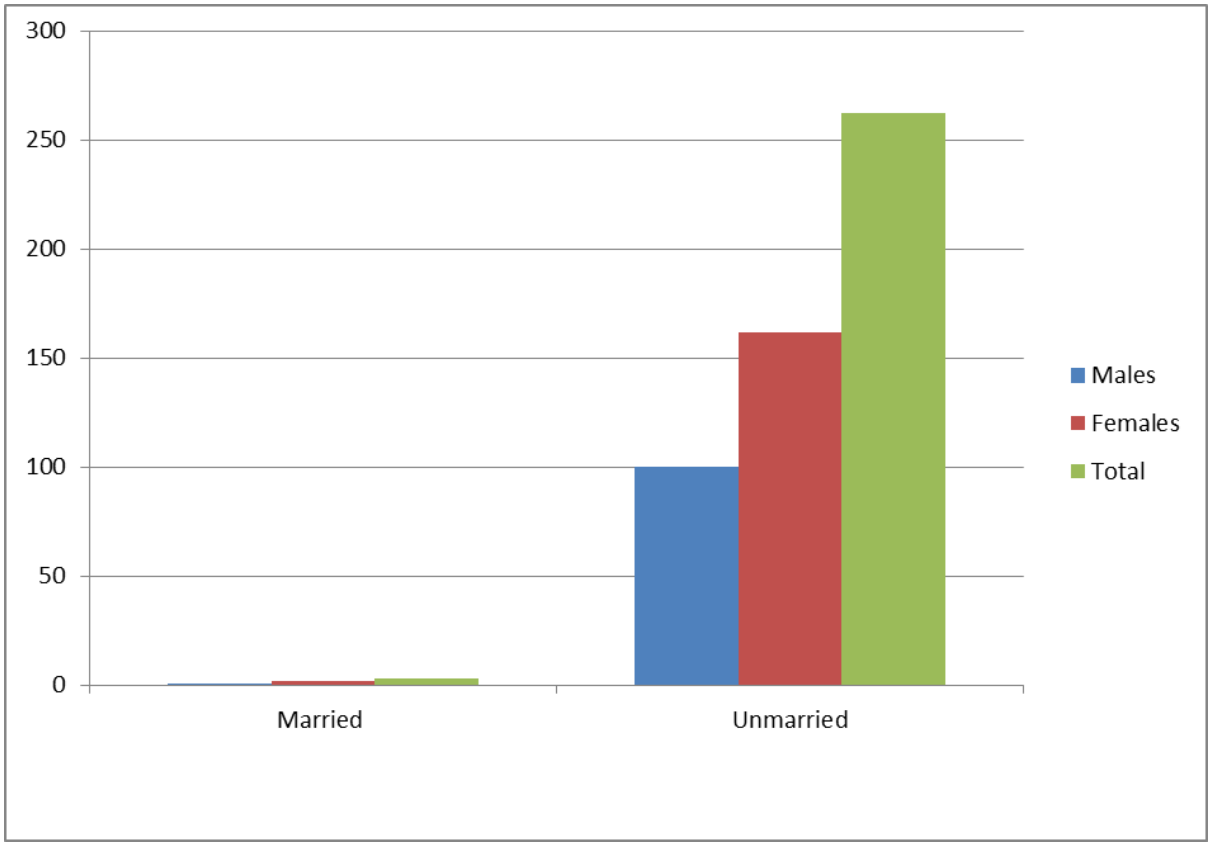


Figure 7: Distribution of participants according to marital status.

Table 06: Assessment of participants According to Year of studying.

Sl. no	Year of studying	Males		Females		Total number of students	Total percentage
		Number of participants	Percentage	Number of participants	Percentage		
1	First year	35	34.6%	63	38.4%	98	36.98%
2	Second year	14	13.86%	33	20.12%	47	17.73%
3	Third year	20	19.8%	26	15.8%	46	17.35%
4	Fourth year	30	29.7%	42	25.6%	72	27.16%
5	Masters	2	1.9%	0	0%	2	0.75%
		101		164		265	

Out of 265 participants, according to education level majority of students participated from first year 36.98%(98), followed by 17.73%(47) were second year, 17.35%(46) were third year, 27.16%(72) were fourth year and 0.75%(2) were masters students.

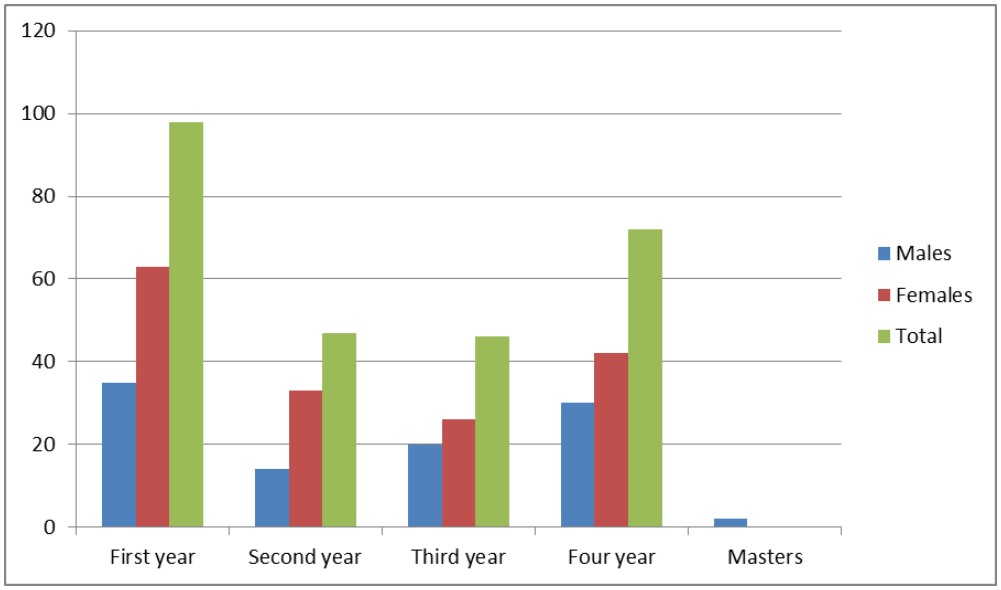


Figure 8: Distribution of participants according to the year of studying.

Table 07: Distribution of participants according to residential area.

Sl.no	Residential area	Males		Females		Total number of students	Total percentage
		Number of participants	Percentage	Number of participants	Percentage		
1	Town	71	70.29%	108	65.45%	179	67.54%
2	Village	30	29.71%	56	34.14%	86	32.45%
		101		164		265	

Out of 265 participants, according to residential area majority of participants from town 177(67.54%) and followed by village 86(32.45%).

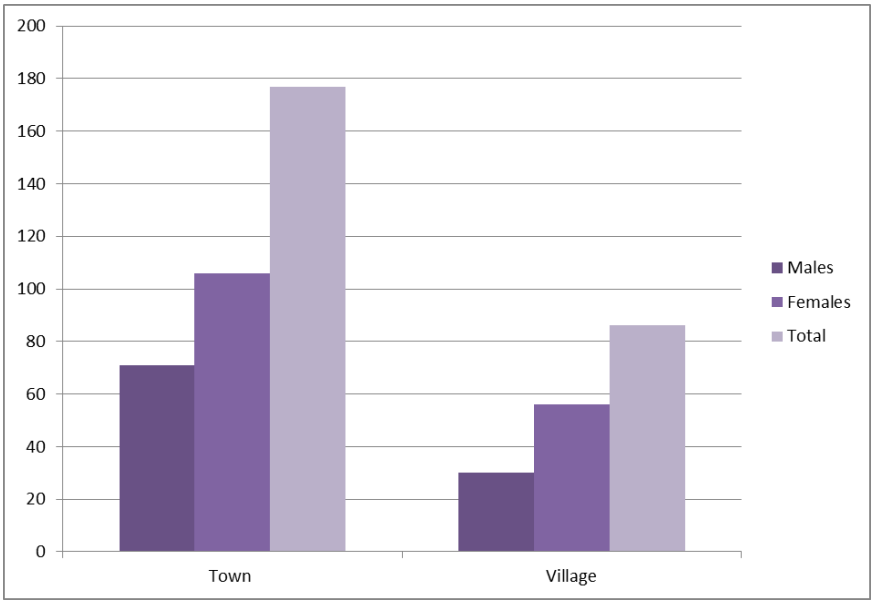


Figure 9: Assessment of students according to residential area.

Table 08: Distribution of participants according to where they Lives with.

Sl.no	Lives with	Males		Females		Total number of students	
		Number of participants	Percentage	Number of participants	Percentage		
1	Parents	36	35.64%	61	37.19%	97	36.6%
2	Brothers and sisters	1	0.99%	3	1.82%	4	1.50%
3	Relatives	2	1.98%	7	4.26%	9	3.39%
4	Hostel	40	39.60%	79	48.17%	119	44.90%
5	PG	16	15.8%	8	4.87	24	9.05%
6	Others (note:by taking room with friends)	6	5.94%	6	3.65%	12	4.52%
	Total	101		164		265	

Among 265 students, assessment of students lives with, the highest number of participants lives with in hostel were 119(44.90%) followed by with parents 97(36.6%), in PG 24(9.05%), others 12(4.52%) with relatives 9(3.39%) and with brothers and sisters 4(1.50%).

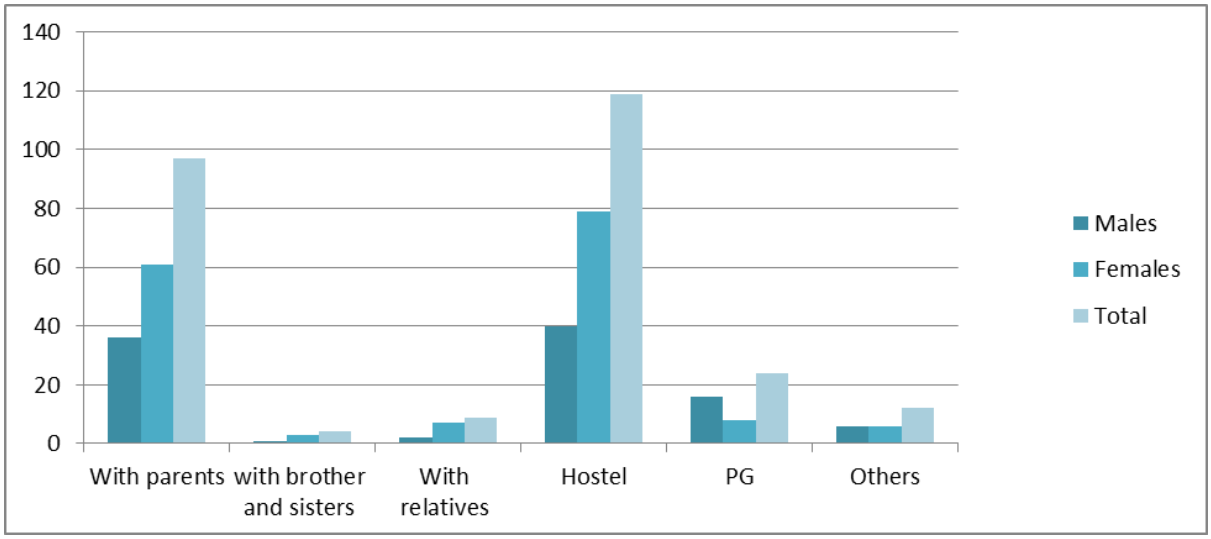


Figure 10: Distribution of participants according to where they lives with.

Table 09: Knowledge components of UTI's among the participants.

Sl. no	Questionnaires	Females	Males	Total	Percentage
Q1	Do you know what a urinary tract infection (UTI) is?				
	Yes	151	94	245	92.45%
	No	13	7	20	7.54%
		164	101	265	
Q2	**Definition of UTI?**				
	Inflammation of bladder	21	13	34	12.83%
	Inflammation in kidney	10	11	21	7.92%

	Inflammation of urethra	35	14	49	18.49%
	None of the above	34	26	60	22.64%
	All of the above	64	37	101	38.11%
		164	101	265	
Q3	**What are the causative factor for UTI?**				
	Bacteria	102	45	147	55.47%
	Viruses	36	12	48	18.11%
	Fungi	7	13	20	7.54%
	Not sure	19	31	50	18.86%
		164	101	265	
Q4	**UTI only affect women?**				
	Yes	17	18	35	13.20%
	No	114	62	176	66.41%
	Not sure	33	21	54	20.33%
		164	101	265	
Q5	**Which symptoms occurs with urinarytract infection (UTI)?**				
	Pain in urination	93	55	148	55.84%
	Red urine	14	9	23	8.67%
	Abdominal pain	17	12	29	10.94%
	Fever	2	3	5	1.88%
	Back pain	2	0	2	0.75%
	Frequent urination	8	3	11	4.11%
	Urgency	3	6	9	3.39%
	Don’t know	25	13	38	14.33%
		164	101	265	
Q6	**Cloudy urine can be a symptom of UTI?**				
	Yes	85	52	137	51.69%
	Not sure	58	28	86	32.45%
	No	21	21	42	15.84%
		164	101	265	
Q7	**Type of drug used to treat UTI’s caused by bacteria?**				
	Anti-biotics	107	62	169	63.77%
	Anti-viral	35	19	54	20.37%
	Vitamin	2	3	5	1.88%
	Others	20	17	37	13.96%
		164	101	265	
Q8	**Maintenance of proper hygiene related to urination is essential to prevent UTI?**				
	Yes	148	73	221	83.39%
	No	6	12	18	6.79%
	Not sure	10	16	26	9.81%
		164	101	265	
Q9	**What are the easiest process to identifyif someone has UTI?**				

	Blood test	21	13	34	12.83%
	Urinalysis	89	62	151	56.98%
	Test for bacteria (Bacteria culture)	54	26	80	30.1%
		164	101	265	

Table 10: Attitude components of UTI's among the participants.

Sl. no	Questionnaires	Females	Males	Total	Percentage
Q1	**Do you think UTI"s are common?**				
	Yes	112	64	176	66.41%
	No	35	21	56	21.13%
	I don't know	17	16	33	12.45%
		164	101	265	
Q2	**Do you feel UTI'S is serious condition?**				
	I don't know	54	31	85	32.07%
	Yes	85	53	138	52.07%
	No	25	17	42	15.84%
		164	101	265	
Q3	**Which complications do you expect from a UTI?**				
	Recurrent UTI	60	33	93	35.09%
	Affects concurrent pregnancy	15	19	34	12.83%
	Affects quality of life	67	35	102	38.49
	Death	10	8	18	6.79%
	Weight decrease	7	0	7	2.64%
	Generalized edema	5	6	11	4.15%
		164	101	265	
Q4	**Who do you think is more affected by UTI?**				
	Affects females more than males	88	65	153	57.73%
	Affects males more than females	4	10	14	4.90%
	Affects both equally	48	10	58	21.86%
	I don't know	24	16	40	15.09%
		164	101	265	
Q5	**What do you think is the best way to deal with a UTI?**				
	Go to the hospital/ clinic	112	12	124	46.79%
	Take rest at home	1	20	21	7.92%
	Take anti biotics	16	30	46	17.35%
	Take analgesics	1	5	6	2.26%
	Drink more water	21	10	31	11.69%
	Take more shower	9	9	18	6.79%
	Don't know	4	15	19	67.16%
		164	101	265	

Table 11: Awareness components of UTI's among the participants.

Sl.no	Questionnaires	Females	Males	Total	Percentage
Q1	**Drinking more water may help your body to clear the infection?**				
	True	139	87	226	85.28%
	False	9	8	17	6.41%
	Not sure	17	6	22	8.30%
		164	101	265	
Q2	**Untreated UTI'S may not have life threatening event?**				
	True	55	31	86	32.45%
	False	68	48	116	43.775
	Not sure	41	22	63	23.77%
		164	101	265	
Q3	**Do you empty your bladder frequently when full?**				
	True	108	54	162	61.13%
	False	16	18	34	12.83%
	Not sure	40	29	69	26.03%
		164	101	265	
Q4	**Holding urine and not draining your bladder fully can increase the risk of UTI?**				
	True	130	54	185	69.811%
	False	6	31	37	13.96%
	Not sure	29	14	43	16.22%
		164	101	265	
Q5	**A simple examination and urine or blood test could save you from lot of trouble in the long term?**				
	True	123	67	190	71.69%
	False	13	18	31	11.69%
	Not sure	28	16	44	16.60%
		164	101	265	
Q6	**If you suspect a UTI's then you need to contact your doctor as soon as possible?**				
	True	144	78	222	83.77%
	False	5	11	17	6.41%
	Not sure	15	11	26	9.81%
		164	101	265	

Table 12: Assessment of knowledge.

Question number	Questionnaires	Percentage of correct responses	Percentage of wrong responses
Q1	Do you know what a urinary tract infection (UTI) is?	92.45%(245)	7.58%(20)
Q2	Definition of UTI?	38.11%(101)	61.88%(164)

Q3	What are the causative factors for UTI?	55.47%(147)	44.55%(118)
Q4	UTI only affect women ?	66.41%(176)	33.58%(89)
Q5	which symptoms occurs with UTI?	74.33%(197)	25.66%(68)
Q6	Cloudy urine can be a symptom of UTI?	51.69%(137)	48.30%(128)
Q7	Type of drug used to treat UTI caused by bacteria?	63.77%(169)	36.22%(96)
Q8	Maintenance of proper hygiene related to urination is essential to prevent UTI?	83.39%(221)	16.63%(44)
Q9	what are the easiest process to identify if someone has UTI?	56.98%(151)	43.01%(114)

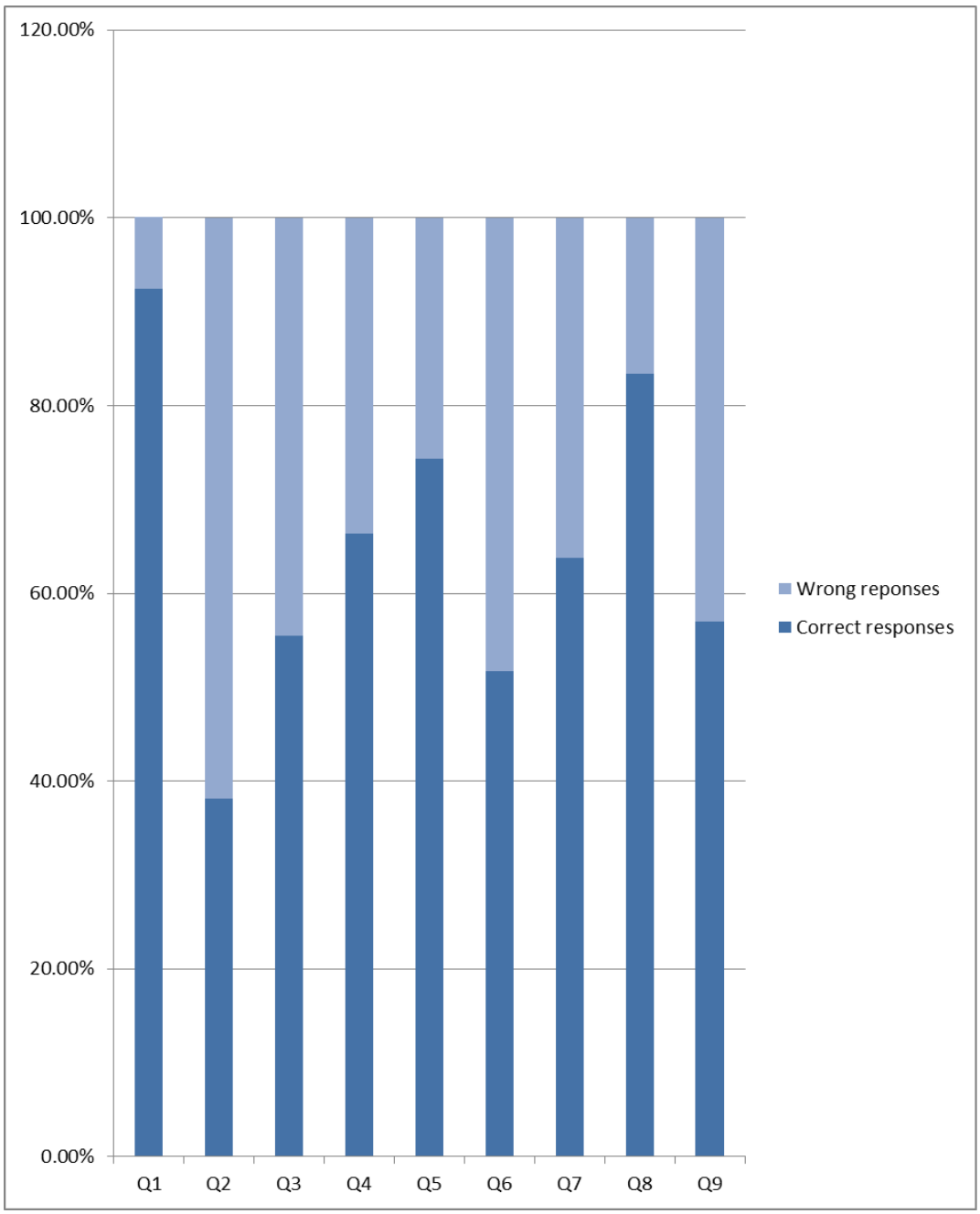


Figure 11: Assessment of Knowledge components.

Table 11: Assessment of Attitude.

Question number	Questionnaires	Percentage of correct responses	Percentage of wrong responses
Q1	Do you think UTI are common?	66.41%(176)	33.56%(89)
Q2	Do you feel UTI is serious condition?	52.07%(138)	47.92(127)
Q3	Which complications do you expect from a UTI?	35.09%(93)	64.90%(172)
Q4	Who do you think is more affected by UTI?	57.73%(153)	42.64%(112)
Q5	What do you think is the best way to deal with a UTI?	58.49%(155)	41.50%(110)

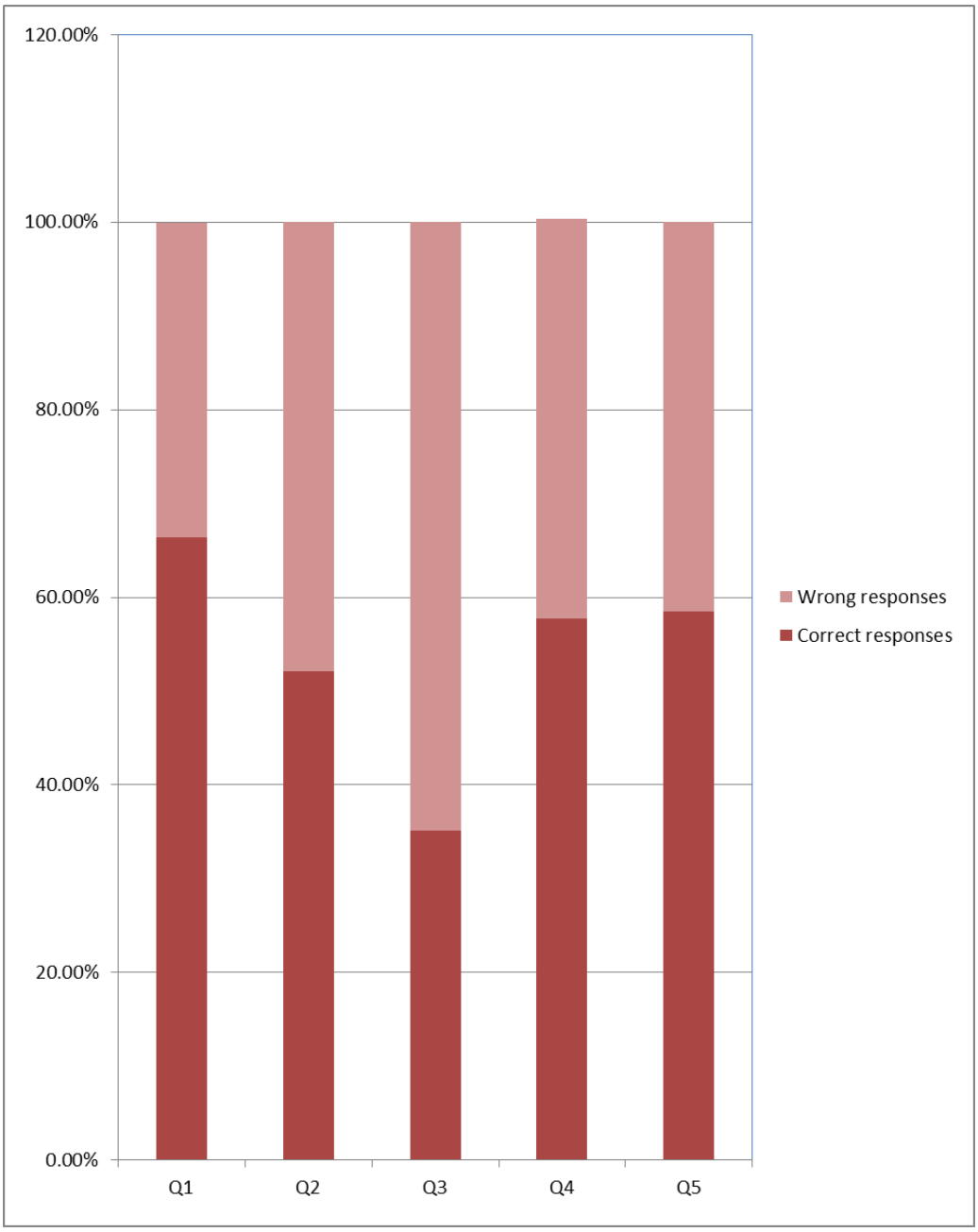


Figure 12: Assessment of Attitude Components.

Table 12: Assessment of knowledge.

SL.NO	Components	Grading score	Category	Number of Participants
01	knowledge	1-4	Poor knowledge	121(45.66%)
02		5-7	Average knowledge	75(28.30%)
03		8-9	Good knowledge	69(26.03%)

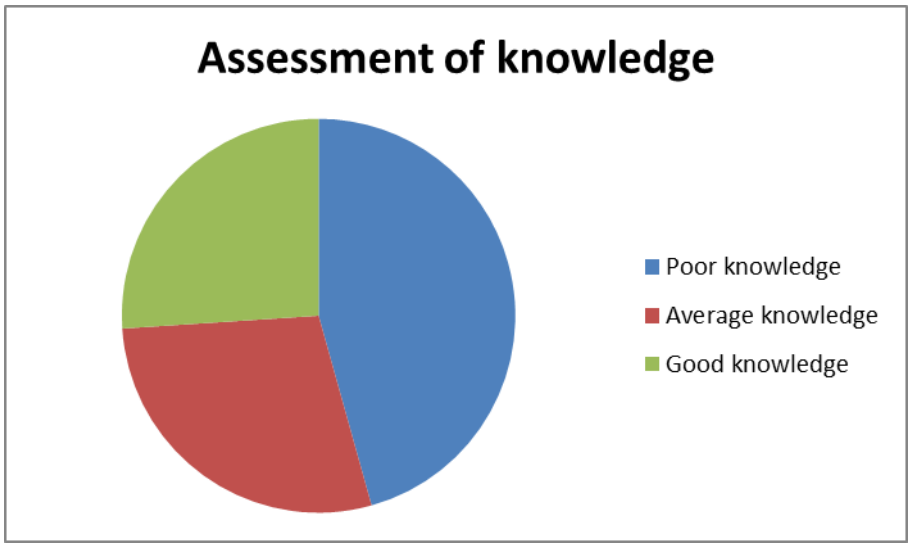


Figure 13: Assessment of knowledge of participants according level of category.

Table 13: Assessment of Attitude.

SL.NO	Components	Grading score	Category	Number of Participants
01	Attitude	1-2	Poor Attitude	69(26.03%)
02		3-4	Average Attitude	53(20%)
03		5	Good Attitude	143(53.96%)

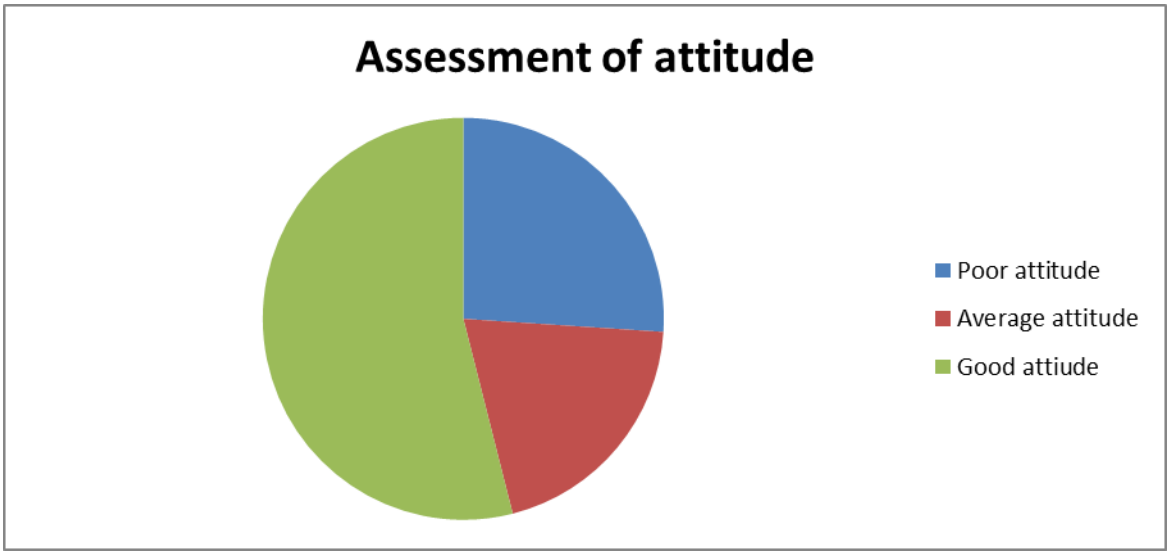


Figure 14: Assessment of Attitude of participants according to level of category.

DISCUSSION

In the present study, cross-sectional observation study on assessment of knowledge, attitude and awareness regarding UTI's among college students in Tumkur region highlights the assessment and education of knowledge attitude and enhancing awareness among college students regarding UTI's.

Assessment of Demographic details

Gender wise

- A total of 265 participants were enrolled for the study, Among 265 participants 101(38.11%) were mates, 164(61.88%) were females as show in figure no:5. Our study similar to study conducted by Fatema tabassum et.al., where Female are more participants than males.

Age wise

- Out of 265 participants, our study reveals that highest number of students participated age group is 18-20 (53.96%) and least number of students participated age group is >24 (1.5%) as shown in figure no:6.

Marital status

- Among 265 participants, married people are 3(1.13%) students in that males were I and females were 2 and unmarried people are 263(98.86%) as shown in figure 7. Our study is similar to study conducted by Fatema tabassum et.al.,.

Education level (year of studying)

- Out of 265 participants, majority of students enrolled from first year 98(46.98%) and least enrolled from masters 2 (0.75%) as show in figure no:8.

Residential are

- Out of 265 participants, majority from town area were 179(67.54%) Students and followed by village area were 86 (32.45%) students as shown in figure no:9. Our study is similar to study conducted by Fatema tabassum et.al.

Lives with

- The highest number of participants lives in hostel were 119(44.90%) students and least number of participants lives with brother and sister were 4(1.50%) as show in figure no:10.

Assessment of Knowledge

Based on assessment of Knowledge components our study results revealed that each Questionnaire showing percentage of correct and wrong responses, in that Q1 shows that 92.45% (245) are correct responses followed by Q2. Shows that 38.11%(101) are correct and 61.88%(164) are wrong response. Q3 shows that 55.47%(147) are correct and 44.55 %(118) are wrong response, Q4 shows 66.41% (176) are correct and 33.58%(89) are wrong response Q5 shows 74.33%(197) are correct and 25.66%(68) are wrong responses, Q6 shows that 51.69%(137) are correct and 48.30%(128) are using responses, Q7 shows that 63.77%(169) are correct and 36.22%(96) are wrong responses,Q8,shows 83.39%(221) are correct and 16.63%(40) are wrong response and ,Q9 shows that 36.98%(151) are correct and 43.01%(114) are wrong response respectively. As shown in figure no: 11

And finally show that out of 9 questionnaires from knowledge components revels that 121 (45.66%) of participants had poor knowledge category followed by 75(28.30%) participants had average knowledge category and 69(26.03%) participants had good knowledge category based on grading score as shown in figure no: 13

Assessment of Attitude

Based on assessment of attitude components our study results revealed that each questionnaires showing percentage of correct and wrong responses, in that Q1 shows that 66.41%(176) are correct responses and 33.56%(89) are wrong responses, followed by Q2 shows that 52.07%(138) are correct response and 47.92%(127) are wrong response, Q3shows that35.095(93) are correct response and 64.90%(172) are wrong response, Q4 shows that 57.73%(153) are correct response and 42.64%(112) are wrong response, Q5 shows that 58.49%(155) are correct response and 41.50%(110) are wrong responses respectively. As shown in figure number: 12.

And finally shows that out of 5 questionnaires from attitude components reveals that 69(26.03%) of participants had poor attitude category followed by 53(20%) of participants

had average attitude category and 143(53.96%) participants had good attitude category based on grading score as shown in figure number:14.

Assessment of Awareness

Based on assessment of awareness components our study results revealed that each questionnaires showing percentage of correct and wrong responses, in that Q1 shows that 85.28%(226) are correct response and 14.71%(39) are wrong response, followed by Q2 shows that 43.775%(116) are correct response and 56.22%(149) are wrong response, Q3 shows that 61.13%(162) are correct response and 38.86%(103) are wrong response, Q4 shows that 69.811%(185) are correct response and 30.18%(80) are wrong response and Q5 shows that 71.69%(190) are correct response and 28.29%(75) are wrong responses and Q6 shows that 83.77%(222) are correct response and 16.22%(43) are wrong responses respectively.

CONCLUSION

- This study was carried out to assess the knowledge, attitude and awareness regarding urinary tract infections, among college students by using self prepared questionnaires.
- This study reveals that female students are more participated than males. In this survey identified that majority of participants from 18-20 age group and majority of participants belongs to first year students. This study found that majority of students residential area belong to town than village and majority of participants living in hostel.
- Based on assessment of knowledge reveals that majority of participants had poor knowledge category regarding UTI's and based on assessment of attitude reveals that majority of participants had good attitude regarding UTI's.
- Many students lack adequate knowledge about UTI's their causes, symptoms and prevention strategies. So this study suggests implementing health education programs that focus on UTI can help bridge knowledge gaps and promote healthy behaviors.
- Educating them regularly would improve their current level of knowledge and makes them complete enough for the public healthcare services.
- So, suggesting accessible and confidential health services on camps can encourage students to seek medical attention when needed.
- Further, there is a need to focus on creating awareness programs should be done to increase student's knowledge about UTI's and make them aware to prevent UTI's and

make them aware to prevent UTI's and encourage them to visit doctors if necessary to reduce the sufferings of morbidity related to UTI's.

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AUTHOR'S CONTRIBUTION

All the authors have contributed equally.

CONFLICT OF INTEREST

All the authors declare no conflict of interest.

CONSENT FOR PUBLICATION

The authors have given their consent for publication.

COMPETING INTERESTS

The authors declare that have no competing interests.

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