ASSESSMENTOFKNOWLEDGE,ATTITUDE,PRACTICESANDRISKFACTORSTOWARDSUROGENITAL SCHISTOSOMIASISAMONGSCHOOL-AGECHILDRENINANAMBRASTATE,NIGERIA

Aims: The aim was to Assess the levelof Knowledge, Attitude, Practices and Risk Factors Towards UrogenitalSchistosomiasisAmongSchool-ageChildreninAnambra State.

Study Design: This study was designed as a community based cross-sectional study conducted in three rural publicprimary schools within a community settings, in three endemic Local Government Areas, (Awka South, OrumbaNorth and Ogbaru Local Government Areas) each from the three Senatorial districts (Anambra Central, AnambraSouth and Anambra North respectively) of Anambra State, South Eastern Nigeria . Atwenty oneitem structuredquestionnaire containing closed ended questions was used as the instruments for data collection and all questionswereprepared infocusoftheobjectivesofthestudy.

PlaceandDurationofStudy:Thisstudywasconductedinthreepublicprimaryschoolsinaselected LocalGovernment Area within the three senatorial zones ofAnambra State, Nigeria between April to December, 2023.**Methodology**:Atotalof399questionaireweredistributedandcompletelyretrievedfromprimaryschoolchildrenint hreerandomlyselectedprimaryschoolsfromthethreesenatorialzones,namely,AnambraCentral,AnambraNorthandAn ambraSouth.Itwasanalyzedusingadescriptivestatisticalanalysisandqualitativedatawerepresentedontables,percenta gesandchartswhileinferentialanalysisweredoneusingsimpleStatisticaltechnique.Hypothesisweretestedusingoddrati ostatisticsat5%whichwereconsideredstatisticallysignificant.DatawereanalysedusingSPSSforWINDOWS(version23.0; SPSSInc.,Chicago,IL,USA).P-values< 0.05wereconsideredsignificant.

Results: Out of the 399 pupils, Anambra North had the highest number with 171 (42.9%) pupils, followed byAnambra Central with 118 (29.5%) pupils and then Anambra South which had 110 (27.6%) pupils. This studyshowed that there was high level of awareness of the disease Urogenital Schistosomiasis (UgS) among school-agedchildren in the study areas in Anambra State. It showed that 65.7% of the total population of 399 school-agedchildren from primary schools in the three selected communities, each from the three Senatorial zones had goodknowledge of the disease, while 34.3% had poor knowledge of Urogenital Schistosomiasis. This study showed thattherewasasignificantrelationshipbetweentheAgeofrespondent($\chi2=12.786$,df=4,p=0.0035),classlevel($\chi2$ = 8.57, df = 4, p = 0.016) and knowledge of UgS but Gender was not significantly associated with knowledge of UgS($\chi2=2.0$,df=3,p=0.2093).Therewasalso,nosignificantassociationbetweenRiskFactorsandSocio-demographics of the study population as ($p>0.05$) for Age, Sex and Class group. On the patronage and utilization ofPraziquantel, the choice drug for the treatment and prevention, 134(33.9%) took Praziquantel for the purpose ofprevention of the disease.254(63.7%)and 107(26.8%) pupils took Praziquantel because teachers and healthworkersgaveit to themrespectively.

Conclusion: Thisstudyhasshowedthatthereisaremarkableincreaseinthelevelofawarenessandreductioninprevalencerateof Urogenitalschistosomiasisin Anambra State.

*Keywords:*Praziquantel*;*UgS*;Senatorialzones;LocalGovernmentArea.*

INTRODUCTION

Schistosomiasis,alsoknownasBilharziasis,afterTheodoreBilharzia,whoidentifiedtheparasitein1851,isadebilitatingparasitic diseasecausedbybloodflukes(trematodes)ofthegenus*Schistosoma*[15].Itisoneoftheneglectedparasiticinfectionsinthe tropicalandsubtropicalareasoftheworld.Theinfectioniswidespreadandprevalentin Africawherethesnailintermediatehosts breedinwaterscontaminatedwithurineor faecal wasteofinfectedindividuals. Globally,Schistosomiasisranks secondtomalariaas theworld'smostdebilitatingparasiticdiseaseintermsoftheextentofendemicareasandnumberofinfectedpersons[20].Itis estimatedthatSchistosomiasisandGeohelminthiasisrepresentmorethan40%oftheglobaldiseaseburdencausedbyalltropical diseases,excludingmalaria [20].
UrogenitalschistosomiasisiswidelydistributedinNigeriaandisconsideredasignificanthealthproblem[11].Thediseaseoccurs mainlyinschool-agedchildrenandyoungadultsinSub-saharanAfrica.Schistosomiasisinfectsalargeproportionofchildrenunder 14 yearsof age inmanyofthe affectedareas.The estimatesfor morbidityandmortalityinaffectedpopulationsare highwithschool agechildrenhavingthehighestprevalenceandintensityofinfection[18].
ReportsonSchistosomiasisdueto*S.haematobium*hasshownthatthediseaseiswidespreadinNigeria,withestimated101.28 millionpersonsatriskand25.83millionpeopleinfected,therebyconstitutingapublichealthproblem,particularlyinchildren [8][1][6][12]14].Thedistributionofthediseaseisfocal, aggregatedandusuallyrelatedtowaterresourcesanddevelopment schemessuchasirrigationprojects,rice/fishfarminganddams.Itisprevalentinallthestatesofthefederation,withahighinfection rateamongschoolchildren [13][5].
InAnambraState,15.0%prevalencerateofUrogenitalSchistosomiasiswasmeasuredacrossthethreesenatorialdistrictsofthe State[15] and15.7%prevalencewasrecorded inOrumbaNorthandSouthLocalGovernmentAreas[18].[17]reporteda prevalence rateof48.1%usinghaematuria(DipStickMethod)asascreeningmethodand58.3%usingPolymeraseChainReaction(PCR) diagnosticapproachinastudyatUmuowelevillage,inAgulucommunityofAnaochaLGA..InUmuikwu-Anam,AnambraWestLGA, aprevalencerateof37.9%and7.9%wererecordedby[7]and[10]respectively.Amidstthelevelofprevalenceofthe diseaseamong school-agedchildrenacrossAnambraState,itisimportantthatthereisacommensuratelevelofknowledgeandawarenessofthe disease,itsinfectionpattern,attitudeandriskfactorsthatcanpredisposethemtoUrogenitalSchistosomiasis(UgS).

MATERIALSANDMETHODS

StudyArea:

ThisstudywasconductedfromApriltoDecember 2023 inthethreesenatorialzonesofAnambraState.AnambraStateissituatedin SoutheasternNigeriaandliesbetweenlatitude5°40'00"Nand6°50'00"Nandlongitude6°40'00"Eand7°20'00"E.Itis boundedbyDeltaStatetotheWest,ImoStateandRiversStatetotheSouth,EnuguStatetotheEastandKogiStatetotheNorth.It hasthreeSenatorialzones,namelyAnambraNorth,AnambraCentralandAnambraSouth(Ndukwe*etal,*2019).Theareahastypical semitropicalrainforestvegetation,characterizedbyfreshwaterswamps.Ithasahumidclimatewithatemperatureofabout30.6°C (87°F)andarainfallbetween152and203centimetersannually.ThemajorriversinthestateareRiverNiger,Omambala,Ulasiand EzuRiver.Thereareothersmallerstreams,lakes(aprominentoneistheAguluLake),pondsandburrowpits.Withmanyrivers, ponds,irrigatedfarmingandburrowpits.AnambraStatehasdiversefreshwaterenvironmentsthatoffernumerousfavourable habitatsforaquaticsnailsthatserveasintermediatehoststo*Schistosoma*(Ekwunife*etal,*2005).AnambraStateisculturally homogeneouswithIgboasthepredominantlanguage,thoughwithslightdialecticalvariationsacrossandtowns.Theyare predominantlyoftheChristianreligion andtheiroccupationismajorlytrading,farming,artisanshipandcivilservants aswell.
ThisstudyconsideredthethreeSenatorialzones(Anambra North,AnambraSouthandAnambraCentral)asyardstickforpartitioning thestudyareaattheStatelevel.EachofthesethreeSenatorialzoneshasseven(7)LGAs,bringingtheLGAstoatotaloftwentyone (21)inAnambraState.Then,attheLGAlevel,three(3)LGAswererandomlyselected,onefromeachofthethreeSenatorialzones. OgbaruLGA,wasselectedfromAnambraNorth,AwkaSouthLGA,wasselectedfromAnambraCentralandOrumbaNorthLGAwas selectedfromAnambraSouth.IneachofthethreeselectedLGAs,atownwasrandomlyselectedforthisstudy.InOgbaruLGAof AnambraNorth,therandomlyselectedtownwasOgbakuba.InAwkaSouthLGAofAnambraCentral,Ezinator(whichcomprisesof Ndikpa,NdioraandNtoko) was randomlyselected. WhileinOrumbaNorthof AnambraSouth,Omoghowas randomlyselected.(Fig 1).

Fig(1)MapofAnambraState–SenatorialDdistricts(Source:Wikipedia)

StudyPopulation

ThestudypopulationwasSchool-agechildren,whichagebracketwasbetween5to15years.SincethestudywasaSchool-base researchandSchool-agedchildrenweretheexpectedfocalstudypopulation,thestudywasrestrictedtoschools.Furthermore,in theselectionofSchools,thestudystrictlyconsideredPublicPrimarySchoolsundertheUniversalBasicEducationBoard(UBEB), wheremostoftheSchool-agechildrenfromage5-15yearswerefoundinacommonclusterandusuallyreceiveannualSchool-base treatmentwithPraziquatel,distributedbyTheCaterCentre(TCC)incollaborationwithAnambraStateMinistryofHealth(AMOH). ThestudypopulationcomprisespupilsfromthefollowingPrimarySchools:
CommunityPrimarySchool,Ogbakuba,OgbaruLGAofAnambraNorth
CommunityPrimarySchoolOmogho,OrumbaNorthLGAofAambraSouth
CommunityPrimarySchoolNdiora,CommunityPrimarySchoolNtokoandCentralSchoolNdikpa,allinEzinator,AwkaSouthLGAof AnambraCentral.

SampleSize

TheAnambraStateSchoolpopulationfromprimaryandsecondaryaccordingtotheAnambraStateStatisticalYearBook,2010isa totalof730,149students.Therefore,usingSloven'sStatisticalFormula:

$n=\frac{N}{1+N(e^2)}$

where;
n=TheSampleSize,
N=730,149(PopulationofPrimaryandSecondarySchoolStudentsinAnambraState),
e=0.05 (ErrorLimit).
Therefore,

$$n = \frac{730{,}149}{1 + (730{,}149\ (0.05^2)}$$

n=399.780,n =400.

SamplingTechnique

Amulti-stagesamplingtechniquewasadoptedtoselectthestudyparticipantsinthestudyarea.First,thestudyareawas partitionedintothethree(3)Senatorialzones,namely:AnambraNorth,AnambraSouthandAnambraCentral.AnambraStatehas 21LGAsandeachoftheseSenatorialzoneshasseven(7)LGAs.One(1)LGAwaspickedfromeachSenatorialzonebyrandom selectionofnumbers.TheresultantLGAswereOgbaruLGAfromAnambraNorth,AwkaSouthLGAfromAnambraCentraland OrumbaNorthLGAfromAnambraSouthrespectively. ThenattheLGAlevel,communitieswerealsorandomlyselectedbasedonthe presenceofecologicalfactorsthatprovidetheambiencefortheoptimalsurvivalofthesnailintermediatehost(*Bulinusspp)*of UrogenitalSchistosomiasis.Thesefactorsincludebutnotlimitedto:freshwaterhabitats,suchasrivers,streams,ponds,lakes, burrowpitsandirrigationsinfarmsettlements.InOgbaruLGA,amongthefollowingcommunities(Odekpe,Ohita,Atani,Ogbakuba, Umunankwo,Osomalla,OgwuIkpeleandAkiri)whichpossess theconsideredecologicalfactors,Ogbakubawasrandomlyselectedin thisstudy.ThesamesamplingprocedurewasadoptedforAwkaSouthLGA,torandomlyselectEzinatorandOrumbaSouthLGAto randomlyselectOmoghocommunitiesrespectively.

Thenagain,intheselectionofSchoolsforthisstudyintheselectedcommunities,theinclusionandexclusioncriteriawereputinto considerationandattemptsweremadetoensurethatthepopulationofeachselectedschoolwasaconsiderablerepresentationof school-agechildreninthestudyareas.Thestudywasschool-agechildrenbasedandthesechildrenwerethosefromage5-15years, whowereenrolledintheCommunityPublicPrimarySchoolwithintheperiodof2019to2021.InOgbakuba(ariverinecommunity, wheremostinhabitantsarepredominantlyfishermen,farmersandtraders),CommunityPrimarySchoolOgbakubawasselected.It wastheonlyPublicPrimarySchoolinOgbakubaatthetimeofthisstudyanditrepresentedthepopulationofschool-agechildrenin OgbaruLGAandAnambraNorthSenatorialzoneatlarge.Similalr,inOmogho(apredominantlyfarmingcommunity),Community PrimarySchoolOmoghowasalsoselectedanditspopulationrepresentedconsiderablythepopulationofschool-agechildrenin Orumba NorthLGAand AnambraSouthSenatorial zoneatlarge. In samevein, Ezinatorbeingtheselected communityin AwkaSouth hasthreesub-communitiesthatmakeupEzinator.EzinatorisanIgbowordthatmeans:"ThreeAccessWay",hence,thethreesub-communities:Ndiora,NdikpaandNtokomakeupEzinatorthelargerone.Eachofthesethreesub-communitieshasonePublic PrimarySchool,makingthePublicPrimary SchoolinEzinatorthree,whichare:OraebekeCommunityPrimary School,Ndiora, Central SchoolNdikpaandCommunityPrimarySchool Ntoko.Thoughthese schoolsare inonelargerCommunityEzinator,theyare considerablyfarapartfromeachother,owingtothelocationsofthesethreesub-communitiesfromoneanother.EzinatorinAwka South,whichisafarmsettlementthatsharesboundarywithAmaokpalainOrumbaNorthLGA,hasthethreeCommunityPrimary Schoolswhichhasthepopulationthatconsiderablyreflectsthepopulationofschool-agechildreninAwkaSouthLGAandAnambra CentralSenatorialzoneatlarge.

3.6**InstrumentforDataCollection**

A21itemstructuredquestionnairecontainingclosedendedquestionswasusedastheinstrumentsfordatacollection. ItwaspreparedinsimpleEnglishandhasthetitle:"ASSESSMENTOFKNOWLEDGE,ATTITUDE,PRACTICESANDRISK FACTORSTOWARDSUROGENITALSCHISTOSOMIASISAMONGSCHOOL-AGECHILDRENINANAMBRASTATE".Thequestionnairewas constructedfollowingathoroughreviewofliteraturesandcomprisedofsectionsA,B,CandD.

Section'A'consistedofquestionsonBio-dataofrespondents.

Section'B'wasonascertainingtheRiskfactorsassociatedwiththeinfectionofUrogenitalSchistosomiasisduetoattitudesand practicesamongstudypopulation.

Section'C'focused ontheassessmentofKnowledgelevelonUrogenitalSchistosomiasisamongthestudypopulation.

Section'D'centeredontheLevelofPatronageofPraziquantel(PZQ)thedrugofchoiceinthecontrolofUrogenitalSchistosomiasis.

Allquestionswerepreparedinfocusontheobjectivesofthestudy.

3.7**ValidityofInstrument**

Thequestionnairewasdevelopedbytheresearcherandwasapprovedbytheprojectsupervisors.Thereafter,theinstrumentwas furthervalidatedbytwootherlecturersinTheDepartmentofPublicHealthwithnecessaryinputs.Theyscrutinizedtheitems containedinthequestionnaires,astoensuretheyaresimple,clearwithunderstandablelanguageandcomprehensiveenoughto achievetheresearchobjectives.Thecontentvaliditywasestablishedthroughstrictadherencetostudyobjectives,whilethe constructvaliditywasestablishedthroughwealthofexperienceofthesupervisor.

3.8**RELIABILITYOFINSTRUMENT**

Thereliabilitycoefficientsof the researchinstrumentwasdeterminedusingCrombachAlphatestandthereliabilitycoefficientusing forty(40)participantsforthe questionnaireinschoolsoutsidetheselectedareas. Thereliabilitycoefficientforquestionnairewas0.8 whichisconsideredreliableforthestudy.

3.9**METHODOFDATACOLLECTION**

Inordertofacilitateaccesstotheareaofstudyandtoobtainmaximumcooperationfromtherespondents,aletterofintroduction fromthe Head,Departmentof Public Healthwas presentedtotheHeads ofeachof theSchools visitedinthe selectedCommunities. Thedistributionandcollectionofthequestionnaireswas enhancedbytrainingresearchassistantstobe familiarwiththecontentsof thequestionnaire,mannerofapproachandthelocationoftheSchools.Indoingthis,theassistanceoftheTeacherswassortfor wherenecessary,especiallyinfilling-outthequestionnaireforpupilsinPrimaries1and2.Thecompletedcopiesofthe questionnairewerecollectedimmediatelyfromtherespondents.

3.10**METHODOF DATAANALYSIS**

ThedatawascollectedwiththeaidofquestionnaireandtobeenteredintotheStatisticalPackageforSocialScience(SPSSversion 23.0)ComputerSoftware.Itwasanalyzedusingadescriptivestatisticalanalysisandqualitativedatawerepresentedontables, percentagesandcharts whileinferentialanalysisweredoneusingsimpleStatistical technique.Hypothesiswastestedusingoddratio statisticsat5%whichwasconsideredstatisticallysignificant.DatawereanalysedusingSPSSforWINDOWS(version23.0;SPSSInc., Chicago,IL,USA).*P*-values< 0.05wereconsideredsignificant.

RESULTS

DemographicCharacteristicsofthestudypopulation

Therewere399school-agechildrenwhowereinterviewedacrossthethreesenatorialzones(AnambraNorth,AnambraCentraland AnambraSouth)using theapprovedquestionnaire. Outof thistotal,213(53.4%)and186 (46.6%)weremalesandfemales respectively(Table1).AnambraNorthhadthemostrespondentswith171pupils(42.8%),followedbyAnambraCentralwith118 pupils(29.6%)andtheleastwasAnambraSouthwith110pupils(27.6%).Theagegroupsofthepopulationstudysizeof399school-agechildrenacrossthethree senatorial zonesin the State werecategorizedintothreegroups:5-8years, 9-12yearsand13-15 years. Pupilsof age5-8years were 145(36.3%),9-12 years were 223(55.9%)and13-15yearswere 31(7.7%).Theclass groups of thesame populationsizeof399school-agechildrenwereclassifiedintothree:Primary1-2whichhad120(30.1%)pupils,primary3-4which had149(37.3%)pupilsandprimary5-6 whichhad130(32.5%)pupils.

Table1:DemographicCharacteristicsof399schoolchildrenby SenatorialZones

Characteristics	Anambra North(%)	Anambra Central(%)	Anambra South (%)	Total(%)
SexMal				
eFemal	90(22.6)	68(17.1)	55(13.7)	213(53.4)
eTotal	81(20.3)	50(12.6)	55(13.7)	186(46.6)
AgeGroups(Yrs)	171(42.9)	118(29.5)	110(27.6)	399(100)
5–8				
9-12	59(14.7)	56(14.4)	30(7.5)	145(36.3)
13-15	96(23.6)	59(14.7)	68(17.0)	223(55.9)
Total	16(4.2)	3(0.7)	12(3.2)	31(7.7)
ClassGroup(Pry)	171(42.9)	118(29.5)	110(27.6)	399(100)
1-2				
3-4	33(8.4)	49(12.3)	38(9.5)	120(30.1)
5-6	67(16.7)	44(11.1)	38(9.5)	146(37.3)
Total	71(17.7)	25(6.3)	34(8.5)	133(32.5)
	171(42.8)	118(29.6)	110(27.6)	399(100)

PREDISPOSINGRISKFACTORSOFTHERESPONDENTS

Parent'sOccupationasaPredisposingRiskFactor

Thefirstriskfactorwastoconsidertowhatextentttheparent'soccupationspredisposetheschool-agechildrentourogenital schistosomiasis. Thereweresixoccupationsconsidered,whicharemostcommoninthestudyareas.Theseinclude: Farming,Fishing, Artisan,Trading,CivilServantandClergyman.Eachparameterherewasconsideredindependently,therefore,thecaseapplies whereonerespondentcanchoosemorethanoneParent'soccupation,sinceweconsideredbothparentsas factors(Table2). Outof the399respondents,283(70.9%)ofthemindicatedthattheirparentswereintoFarming,84(21.1%)indicatedthereparentswere intoFishing.ChildrenofArtisanparentswere102(25.6%),whilethosewhoseparentstradewere150(37.6%).CivilServantswere parentsto62(15.5%)pupilsand37(9.3%)ofthe399 school-agechildrenhadparentswhoareclergymen.

SourcesofDrinkingWater

Anotherpredisposingfactorconsideredwerethesourcesfromwhichtheschool-childrengettheirdrinkingwater.Thiswasalso consideredindependentlyasagoodnumberoftheentirestudypopulationchosemorethanonesourceofdrinkingwater.Sources ofdrinkingwaterconsideredwereRiver/Stream,BoreHole/Tapwater,Rainwater,Sachet/Bottlewater.Outof399school-children 199(47.6%)indicatedthatRiver/Streamwerepartoftheirsourcesofdrinkingwater.253(63.4%)agreedthatBoreHole/Tapwater weretheirownsources,whileRainwaterwaschosenasasourceby90(22.6%)pupils.Onthewatersources,51(12.8%)school-age childrensaidtheyalsodrinkSachet/Bottlewater.

DailyActivities

Thereweredailyroutineactivitieswhichwereconsideredaspredisposingriskfactorsofurogenitalschistosomiasisamongschool-childreninthestudyareasinAnambraState.Theseactivitiesinvolve:SwimminginStreams,Rivers,LakesandPonds(S/R/L/P), WashinginS/R/L/P,JoiningparentstoFarm/Fish,GoingforsnailcatchingbyS/R/L/P.Theseparameterswerealsoconsidered independentlywithrespecttotheentirestudypopulationandmostoftheschool-agechildrenchosemorethanoneactivity.Outof

the399 studypopulation,259 (64.9%) indicatedthattheywereinvolvedinSwimming inS/R/L/P and259 (64.9%) also indicatedthat theyWashedinS/R/L/P.Thenagain,336(84.2%)affirmedthattheyjointheirparentsinFarmingandFishingactivities,while113 (28.3%)agreedthattheyengagedinSnailCatchingbyS/R/L/P.

Table2:ResponsesofInterviewees bySchools/SenatorialZones toRiskFactorsofUrinarySchistosomiasis

Variables	AnambraNorth	AnambraCentral	AnambraSouth	
	No.(%)	No.(%)	No.(%)	Total(%)
PARENT'SOCCUPATION				
Farming	136(34.1)	79(19.8)	68(17.0)	283(70.9)
Fishing	43(10.8)	19(4.7)	22(5.0)	84(21.1)
Artisan	32(8.0)	22(5.5)	48(12.0)	102(25.6)
Trading	94(23.6)	27(6.8)	29(7.3)	150(37.6)
CivilServant	29(7.3)	18(4.5)	15(3.8)	62(15.5)
Clergyman	9(2.30)	16(4.0)	12(3.0)	37(9.3)
SOURCEOFDRINKINGWATER				
River/Stream	62(15.5)	57(14.3)	71(17.8)	190(47.6)
BoreHole/Tapwater	115(28.8)	65(16.3)	73(18.3)	253(63.4)
RainWater	40(10.0)	27(6.8)	23(5.8)	90(22.6)
Sachet/Bottledwater	23(5.8)	10(2.9)	18(4.5)	51(12.8)
DAILYACTIVITIES				
SwimminginS/R/L/P	116(29.1)	97(24.3)	46(11.5)	259(64.9)
WashingatS/R/L/P	105(26.3)	80(20.1)	74(18.5)	259(64.9)
JoinyourParentstoFish/Farm	148(37.1)	89(22.3)	99(24.8)	336 (84.2)Gofor snail catchingby the
S/R/L/P	55(13.9)	48(12.0)	30(7.5)	113(28.3)

NB:S/R/L/P=Stream/River/Lake/Pond

PARENTS'LEVELOFEDUATION

TheFig2belowisaBarchartrepresentationofthelevelofawarenessofthedisease,UrogenitalSchistosomiasisbytheparentsof thepupilsintheschoolsacrossthestudyareasinAnambra.Theparents'levelofawarenesswasmeasuredincomparisonwiththeir currentlevelofeducationatthetime.Thisistoascertainiftherewasanassociationbetweentheparents'levelofeducationand awarenessofthediseaseandhowthisassociationimpactsontheknowledgeofthepupilsonthedisease.TheBarchatshowsthat AnambraNorthhadmostoftheparentswhoaremoreenlightenedandsubsequentlyaremoreawareofthediseaseurogenital schistosomiasis.ThisisfollowedbyAnambraCentralandthenAnambraSouthwhichhadleasteducatedparents.

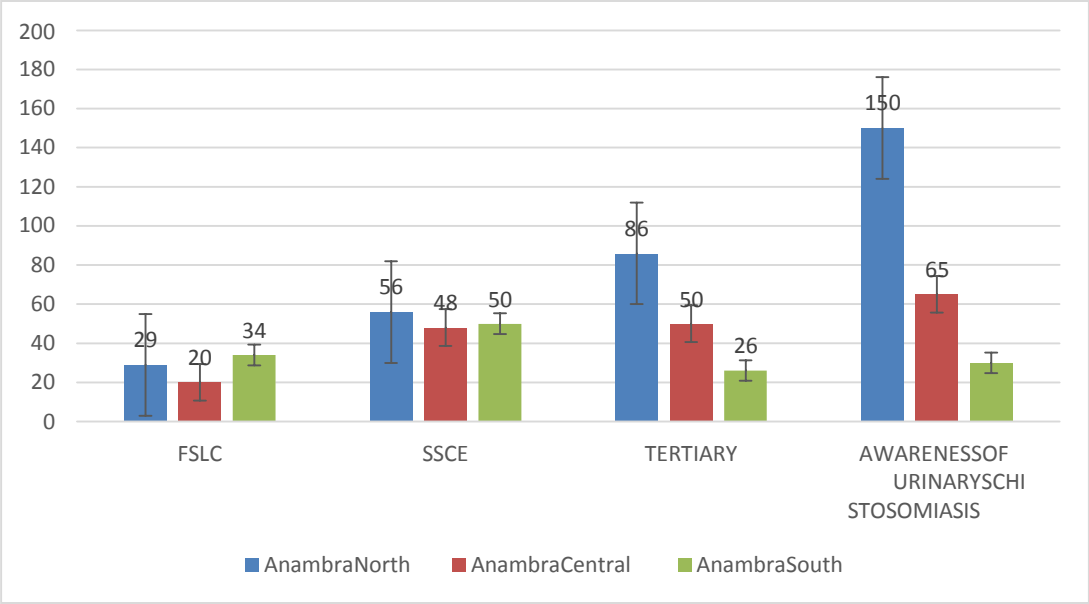

Fig:2
Parents'HighestEducationLevelandAwarenessofUrinarySchistosomiasisby399Interviewees

KNOWLEDGETOWARDSUROGENITALSCHISTOSOMIASIS(Table3)

SourceofInformationabouturinary schistosomiasis

A total of 277(69.4%) of the sample population interviewed indicated that they got the information of the disease from their variousschools, while 35(8.8%) agreed that it was in their individuals Churches they were informed about it. We had 27(6.8%) pupilsaffirmedthattheirinformationabouturogenitalschistosomiasiswasgottenfromtheirCommunityHealthCentres,however,19(4.7%) got the information about the disease from the Mass media, while Social Media was tagged by 11(2.7%) pupils. Then again,17(4.2%)pupilssaidtheirParentstoldthemaboutUrinarySchistosomiasis,while16(4.0%)mentionedotherunspecifiedsources.

CausesofUrogenitalSchistosomiasis

There were several parameters considered as possible cause(s) of Urogenital Schistosomiasis and among these, Eating of snails wasinculpated by 91(22.8%) pupils as a cause, while 81(20.3%) pointed fingers at Contact with infected water. In same vein, 65(16.2%)and 39(9.8%) believed that Urogenital Schistosomiasis is caused by Witchraft and a Curse from the gods respectively. Playing in thesoilwastickedby43(10.8%)pupilstobethecauseofUrogenitalSchistosomiasis,while165(41.4%)respondentssaiditwasEating withdirtyhandsorContaminatedfood.Similarly,105(26.3%)pupilssaidonegetsUrogenitalSchistosomiasisfromDrinking untreatedwater,while38(9.5%)choseothernon-specifiedcauses.

SignsandsymptomsofUrogenitalSchistosomiasis

Thereweredifferentsignsand symptomsthat wereconsidered in thisresearch to beassociated with UrogenitalSchistosomiasisand oneofthemisBodyachewhichpassedamong107(26.8%)pupilsassymptom,whileHeadAchewastickedby81(20.3%)ofthe entirerespondents.BloodinstoolandBloodinurinewereassociatedassymptomsby131(32.4%)and165(41.4%)ofthesample populationrespectively.RegularFeverandBodyitchingweretickedassignsandsymptomsofU.Sby35(8.8%)and39(9.8%)pupils respectively.Abdominalpainhad47(11.8%),Vomiting29(7.3%),Diarrhea27(6.8%),LossofAppetite29(7.3%),PainfulUrination 32(8.0%),Nightmares19(4.7%)ofthepupilsand37(9.2%) pupilchoseothernon-specifiedsignsandsymptoms.

Table3:
KnowledgetowardsUrinarySchistosomiasisamong399pupilsbySchools/Senatorialzones

ZONE	AnambraNorth (N=171)		AnambraCentral (N=118)	AnambraSouth (N=110)	Variables
	Frequency(%)	Frequency(%)	Frequency(%)	Total (%)	
Knowledge					
SourceofinformationaboutUrogenitalSchistosomiasis?					
School	130(32.6)		81(20.3)	66(16.5)	277(69.4)
Church	13(3.2)		12(3.0)	10(2.5)	35(8.8)
HealthcareCentre	10(2.5)		7(1.7)	10(2.5)	27(6.8)
MassMedia	5(1.2)		5(1.2)	9(2.2)	19(4.7)
SocialMedia	4(1.0)		0(0.0)	7(1.7)	11(2.7)
Parents	8(2.0)		4(1.0)	5 (1.2)	17(4.2)
Others	1(0.2)		9(2.3)	6(1.5)	16(4.0)
WhatarethecausesofUrogenitalSchistosomiasis?					
EatingSnails	23(5.7)		15(3.7)	53(13.2)	91(22.8)
ContactwithInfectedwater	6(1.5)		17(4.2)	58(14.5)	81(20.3)
Witchcraft	37(9.2)		15(3.7)	13(3.2)	65(16.2)
Cursefromthegods	19(4.7)		9(2.3)	11(2.7)	39(9.8)
Playinginthesoil	19(4.7)		14(3.5)	10(2.5)	43
(10.8)Eatingwithdirty hands					
OrContaminatedfoods	90(22.5)		48(12.0)	27(6.8)	165(41.4)
Drinkinguntreatedwater	44(11.0)		39(9.8)	22(5.5)	105(26.3)
Others	15(3.7)		12(3.0)	1(0.3)	38(9.5)
WhatarethesignsandsymptomsofUrinarySchistosomiasis					
BodyAche	60(15.0)		12(13.0)	35(8.7)	107(26.8)
Headache	43(10.8)		7(1.7)	31(7.8)	81(20.3)

Bloodinstool	29(7.3)	23(5.8)	79(19.8)	131(32.8)
Bloodin Urine	49(12.3)	51(12.8)	65(16.2)	165(41.4)
RegularFever	17(4.2)	6(1.5)	12(13.0)	35(8.8)
Bodyitching	11(2.7)	1(0.3)	27(6.8)	39(9.8)
Abdominalpain	27(6.8)	9(2.3)	11(2.7)	47(11.8)
Vomiting	14(3.5)	7(1.7)	8(2.0)	29(7.3)
Diarrhea	4(1.0)	0(0)	23(5.8)	27(6.8)
Lossofappetite	9(2.2)	1(0.3)	19(4.7)	29(7.3)
PainfulUrination	5(1.2)	1(0.3)	26(6.5)	32(8.0)
Nightmares	7(1.7)	6(1.5)	6(1.5)	19(4.7)
Others	17(4.2)	9(2.2)	11(2.7)	37(9.2)

NB:NB:S/R/L/P=Strea/Lake/Pond

ATTITUDESTOWARDSINFECTION(Table4)

When we looked at the attitude of the pupils towards the infection Urogenital Schistosomiasis (Table 4), 296(74.2%) of the entire pupilsin the study areas considered the disease as a serious infection, 53(12.3%) pupils said it was like any other infection. Pupils who believedit is Not a Serious Infection were 23(5.8%), while 8(2.0%) believed it is a Sickness from the gods and those pupils who chose other non-specificattitudetowardstheinfection were20(5.0%).

HowUrogenitalSchistosomiasisisprevented

Considering the sampled population independently, to prevent Urogenital Schistosomiasis, 216(54.1%) pupils chose Avoid swimming inRivers, Stream, Lake or Pond (R/S/L/P), while 178(44.6%) went with Avoid washing in R/S/L/P. In same vein, 63(40.9%) said that toprevent the disease one must Wear footwear. Sleeping under Bed Nets was chosen by 166(41.6%) pupils as a measure of preventingUrogenital Schistosomiasis, while 187(46.9%) pupils agreed that Avoiding Fishing Activities will prevent being infected with the disease,then127(18.3)pupilssaidNotoffendingthegods willkeep onesafefromthedisease.

HowUrogenital SchistosomiasisistreatedintheStudyAreas.

Whenweconsideredhowtheschool-agechildrenaccessedtreatment,whentheyperceivedtheymayhavebeeninfectedwithUrogenital Schistosomiasis, 350(85.2%) pupils said one of the major ways the get treated was to visit the Hospital, 104(26.1%) pupilsadmitted that Visiting Patent Medicine Stores was part of their approaches, while 115(28.8%) pupils confirmed that Treatment withherbs was part of the approaches they adopted. In the same vein, 52(13.0%) affirmed that Visiting Prayer House was part of what theydid in view to getting healed of the disease, while 89(22.3%) pupils said they also explored Visiting Traditional Chief Priests for remediesbut35(8.8%)pupilssaidthey didnothingabout thecondition.

Table4:AttitudeTowardsUrogenitalSchistosomiasisamong399pupilsbySchools/Senatorialzones

ZONE Variables	AnambraNorth South(N=171) Frequency(%)	AnambraCentral (N=118) Frequency(%)	Anambra (N=110) Frequency(%)	Total(%)
AttitudeTowardsUrogenitalSchistosomiasisAttitudetowardsInfection				
ConsideredasaseriousInfection	138(34.6)	65(16.2)	93(23.3)	296(74.2)
JustlikeotherInfections	18(4.5)	21(5.3)	33(8.3)	53(12.3)
NotaseriousInfection	3(0.8)	7(1.7)	13(3.3)	23(5.8)
Sicknessfromthegods	2(0.5)	6(1.5)	0(0.0)	8(2.0)
Others	5(1.2)	8(2.0)	7(1.7)	20(5.0)
HowdoyoupreventUrogenitalSchistosomiasis?				
AvoidswimminginR/S/L/P	84(21.1)	42(10.5)	90(22.6)	216(54.1)
AvoidwashinginR/S/L/P	56(14.0)	43(10.8)	79(17.8)	178(44.6)
Wearingoffootwears	50(12.5)	46(11.5)	67(16.8)	63(40.9)
SleepingunderBednets	67(16.8)	50(12.5)	49(12.3)	166(41.6)
AvoidFishingActivities	69(17.3)	30(7.5)	88(22.1)	187(46.9)
Notoffendingthegods	76(19.4)	32(8.0)	19(4.7)	127(18.3)
HowdoyoutreatUrogenitalSchistosomiasisinyourLocality?				
GoingtotheHospital	150(37.6)	86(21.6)	104(26.1)	340 (85.2)
VisitingPatent Medicine Store	38(9.5)	18(4.5)	48(21.3)	104(26.1)
Treatmentwithherbs	52(13.0)	24(6.0)	39(9.8)	115(28.8)
VisitingPrayerHouses	25(6.3)	15(3.8)	12(3.0)	52 (13.0)
VisitingTraditional Chief Priest	71(17.8)	13(3.3)	5(1.3)	89(22.3)
DoingNothing	20(5.0)	8(2.0)	7(1.8)	35(8.8)

PATRONAGEOFPRAZIQUANTELINTHECONTROLOFUROGENITALSCHISTOSOMIASIS(Table5,Fig2)

ReasonforTakingPraziquantel

The pupils in all the study areas gave various reasons why they took Prazequantel. Among these included 254(63.7%) pupils whosaidthat they only took the drugs because it was giving to them in school by their Teachers and Health workers, while 107(26.8%) pupils saidthat they took the drugs because Health Workers gave it to them in the Church. Then again, 134(33.9%) pupils said they actually tookPrazequantelfor theprevention ofurogenital schistosomiasis.

NumberoftimesPraziquantelhasbeentakenfrom2019to2021

The Anambra State Government through the Ministry of Health and Ministry of Education in collaboration with The Carter FoundationhasbeenadministeringPrazequantelinAnambraState,particularlyamongSchool-agechildreninareasendemicforurogenitalschistosomiasis. In same vein, we then investigated the level of patronage of the drug as a major control strategy for UrogenitalSchistosomiasis among the school-age children in the randomly selected areas in the three Senatorial zones of the State for the period of2019to2021.

In this course, we found out that among the 399 sampled population, 126(31.6%) attested to have taken Prazequantel once since 2019,98(24.6%) of the pupils took twice, 96(24.0%) pupils were only those who took three times from 2019 to 2021. However, 76(19.0%) saidthey either don't take Prazequantel or have stopped taking it for one reason or the other, while 3 (0.75%) said they have not seen thedrugPrazequantelfor thefirsttime.

ReasonsforStoppingusageorNon-IntakeofPraziquantel

In order to ascertain the reasons why some pupils have either refused to take Praziquantel or stopped taking Praziquantel, we adoptedthesamplingofsomepossibleadverseevents,irritations,allergiesandbeliefsthatmaybeassociatedwithtakingthedrugs.Inconsideratio noftheseunderlyingfactors,76(19.0%)pupilsaffirmedthattheywerepassingbloodintheirurinesaftertakingPraziquantel for the first time, while 74 (18.5%) said they stopped taking Prazequantel because it is bitter. Further findings showed that34 (8.5%) pupils said they stopped taking Praziquatel because it is bitter, 69 (17.3%) pupils said they have never taken the drug because,their parents asked them not to take any drugs giving to them in school, while 25 (6.3%) said they stopped taking Praziquantel because itmakes them drowsy. Then again, 30 (7.5%) pupils confirmed that they stopped taking the drugs because it makes them vomit, 14 (3.5%)pupils said they vomited blood the first time they took Praziquatel, 28 (7.0%) said they do not take Praziquantel, because the odourirritates them. There were also 19 (4.5%) pupils who said they stopped taking Praziquantel because they had rashes on their bodies thefirst time they took it. This may sound awkward but 22 (5.5%) of the sample population believed that urinating blood is a spiritualproblem,assuchtheydonottakePraziquantel,however128(32.1%)pupils said theydonothaveanyissuestakingPraziquantel.

Table5:Responsesof399IntervieweesbySchools/SenatorialZones onReasonfortakingPraziquatelandStoppingUsageorNon-intake

Variables	AnambraNorth	AnambraCentral	AnambraSouth	
	Frequency(%)	Frequency(%)	Frequency(%)	Total(%)
Whydidyoutake PZQ				
Healthworkersandour Teachersgaveittousin school	**99(24.8)**	**68(17.0)**	**87(21.8)**	**254(63.7)**
Healthworkersgaveus intheChurch	**29(7.2)**	**24(6.0)**	**54(13.5)**	**107(26.8)**
Topreventmefromgetting Schistosomiasis	**17(4.3)**	**54(13.5)**	**63(15.8)**	**134(33.9)**
HowmanytimesdidyoutakePraziquantelsince2019?				
Once	**91(22.8)**	**20(5.0)**	**15(3.8)**	**126(31.6)**
Twice	**52(13.0)**	**24(6.0)**	**22(5.5)**	**98(24.6)**
Thrice	**38(9.5)**	**43(10.8)**	**15(3.8)**	**96(23.1)**
IfyouhavestoppedtakingPZQ,why?				
Iwaspassingbloodinurine aftertaking itforthefirsttime	**24(6.0)**	**24(6.0)**	**28(7.0)**	**76(19.0)**
Istoppedtakingitbecause itisbitter	**23 (5.8)**	**27(6.8)**	**24(6.0)**	**74(18.5)**
Idonottakebecauseitis biginsize	**12(3.0)**	**17(4.3)**	**5(1.3)**	**34(8.5)**
Myparentsaskedmenot totakeit	**38 (9.5)**	**19(4.8)**	**12(3.0)**	**69(17.3)**
Istoppedtakingitbecause itmake medrowsy	**11 (2.80**	**12(3.0)**	**2(0.1)**	**25(6.3)**
Istoppedtakingitbecause itmakesmevomit	**5(1.3)**	**13(3.3)**	**12(3.0)**	**30 (7.5)Istoppedtaking itbecause Ivomitedbloodthefirsttime Itookit**	**6(1.5)**	**7(1.8)**	**1**(0.3)	**14 (3.5)**
Idon't takeitbecausethe smell irritatesme	**9(2.3)**	**5**(1.3)	**14(3.5)**	**28(7.0)**
Istoppedtakingitbecauselhad rashesthefirsttimeItookit	**3(0.7)**	**13(3.3)**	**3(0.7)**	**19(4.5)**
Idon't takeitbecause Ibelievebloodintheurineisaspiritual problem	**12(3.0)**	**6**(1.5)	**4(1.0)**	**22(5.5)**
Idon't haveanyissuetaking Praziquantel	**54(13.5)**	**28(7.0)**	**46(11.5)**	**128(32.1)**

Furthermore,Fig3belowshowsthatAnambraSouthhadthehighestknowledgeandpatronageofthe prophylaxisat above80%patronage,thanAnambraCentraland AnambraNorth whichwerebothbelow80%in patronageoftheprophylaxisPraziquantel,thedrugofchoiceinthecontrolofUrogenitalSchistosomiasis. However,onthegeneralscale,therewasanoverallknowledgeandpatronageofprophylaxisatabove65%in allthreeSenatorial zones, whichis actuallyaconsiderablevalueforAnambraState.

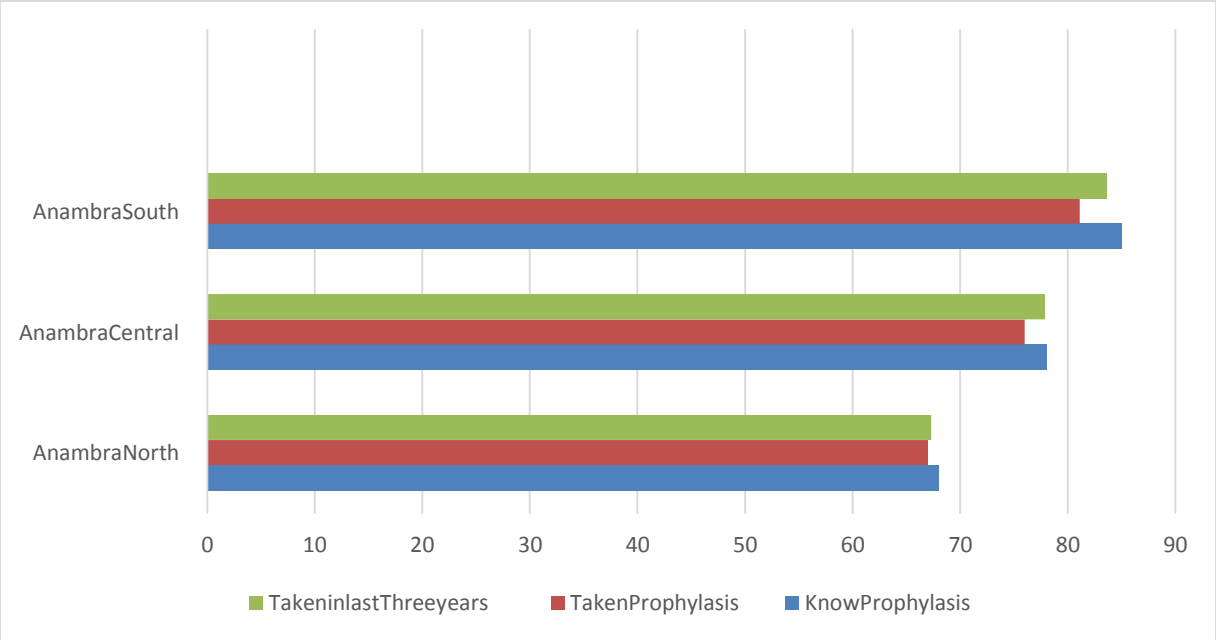

Fig: 3: Percentage Distribution of 399 Interviewees by Schools/ Zones onResponsestoKnowledgeandUptakeofProphylacticDrug,Praziquantel.

OverallKnowledgeLevelofUrogenitalSchistosomiasis amongRespondents

Fig.4belowshowsthatmorethanhalfoftherespondents,262(65.7%)acrossthethreesenatorialdistricts demonstratedgoodknowledgeofUrogenitalSchistosomiasis,while137(34.3%)ofthemhadpoorknowledge ofUrogenitalSchistosomiasis.

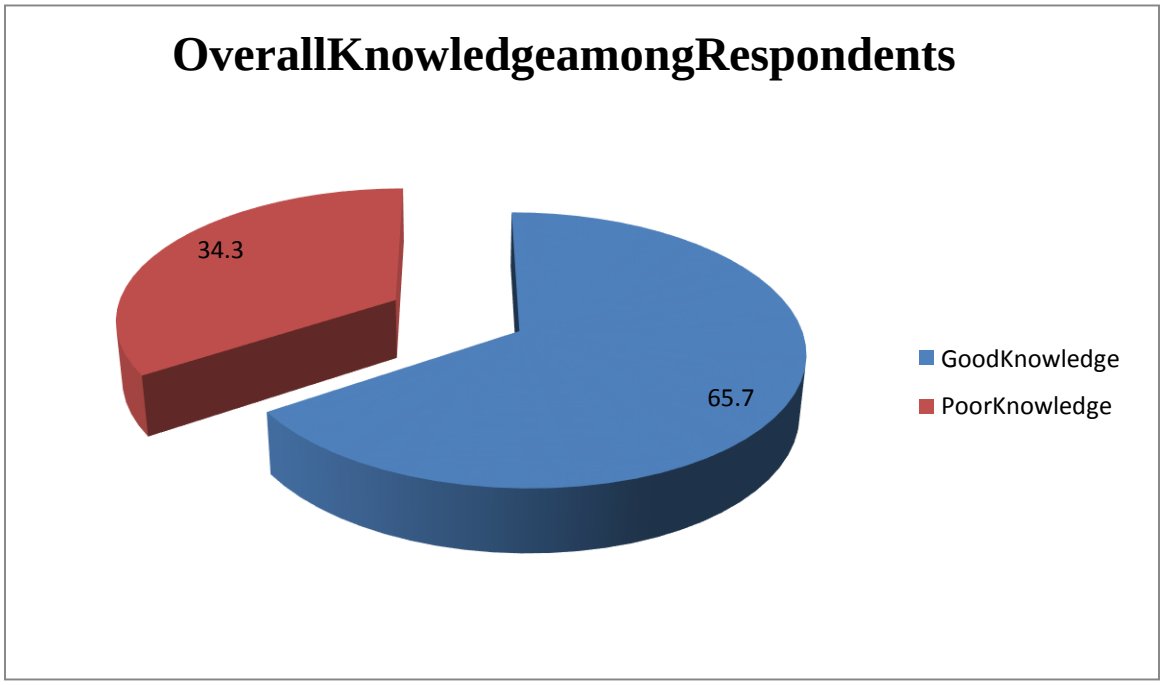

Figure4:Overallknowledgeof Urinaryschistosomiasisamongrespondents

ANALYSISOFRELATIONSHIPBETWEENPARAMETERS

AssociationbetweentheknowledgeofUrogenitalSchistosomiasisandsocio-demographicsof the RespondentsattheSchools/SenatorialZone.

Table6belowshowstheassociationbetweentheknowledgeofurinaryschistosomiasisandsocio-demographicsofrespondentsattheSchools/SenatorialZone.Therewasastatisticallysignificantrelationship betweenageofrespondents(χ2=12.786,df=4,p=0.0035),classlevel(χ2=8.57,df=14,p=0.016)and knowledgeofUrogenitalSchistosomiasis.Alsotheresultsshowedthatgender(χ2=2.0,df=3,p=0.20923)was notassociated withknowledgeofUrogenital Schistosomiasis

4.6ANALYSISOFRELATIONSHIPBETWEEN PARAMETERS

Association between the knowledge of Urogenital Schistosomiasis and socio-demographics of theRespondentsatthe Schools/Senatorial Zone.

Table 6 below shows the association between the knowledge of urinary schistosomiasis and socio-demographics of respondents at the Schools/SenatorialZone. There was a statistically significantrelationship between age of respondents(χ2 =12.786, df=4, p= 0.0035), class level (χ2 =8.57, df=14,p= 0.016) and knowledge of Urogenital Schistosomiasis. Also the results showed that gender (χ2 = 2.0,df=3,p=0.20923)was not associatedwith knowledgeof Urogenital Schistosomiasis.

Table6:AssociationbetweentheknowledgeofUrogenitalSchistosomiasisandsocio-demographicsofthe Respondentsin the Schools/SenatorialZone.

Variables	KnowledgeLevelofUrogenitalSchistosomiasisby Schools/SenatorialZone			$\chi 2$	P-value	Decision
	GoodKnowledge(%)	**PoorKnowledge (%**	**Total (%)**	12.786	0.0035	***S****
Age						
5 – 8	37(9.4%)	92(23.2%)	129(32.3%)			
9-12	58(14.5%)	27(6.8%)	85(21.3%)			
13-15	167(41.8%)	18(4.3%)	185(46.4%)			
Total	**262(65.7)**	**137(34.3%)**	**399 (100%)**			
Gender				2.0	0.20923	***NS***
Male	106(26.5%)	107(27.0%)	213(53.4%)			
Female	98(24.5%)	88(22.0%)	186(46.6%)			
Total	**204(51.1%)**	**195(48.9%)**	**399 (100%)**			
ClassGroup				8.57	0.016	***S****
1-2	61(15.3%)	59(14.8%)	120(30.1%)			
3-4	97(24.3%)	49(12.3%)	146(36.6%)			
5-6	84(21.0%)	49(12.3%)	133(33.3%)			
Total	**242(60.6)**	**157(39.4)**	**399 (100%)**			

S*=Significant,NS*=NotSignificant

AssociationbetweentheRiskfactorsofUrogenitalSchistosomiasisandthesocio-demographicsof RespondentsattheSchools/SenatorialZones

Table7below,alsoshowsthatsocio-demographiccharacteristicsoftherespondents,whichincludetheAge, GenderandClass,showednosignificantassociationwiththeRiskfactorsofUrogenitalSchistosomiasisinthe studyareas. (p>0.05). (SeeTable 7 below):

Table 7: Association between the Risk factors of Urogenital Schistosomiasis and the socio-demographics of 399 IntervieweesbySchools/Senatorial Zones.

Socio-demographics	$\chi 2$	DF	P.Value	Decision
Age	2.039	7	0.218	NS
Gender	13.4	5	0.553	NS
Class	7.53	3	0.435	NS

AssociationbetweenRiskFactorsofUrogenitalSchistosomiasisin thestudyareasandStudypopulation.

Thetable8 belowshowshow theRiskFactors of UrogenitalSchistosomiasis areassociatedwith the respondentsandthestudyareas.Theriskfactorsconsideredinthisstudywere Parent's Occupation,Sourcesof Drinkingwater andDailyActivities.Thetablefurther wentto showthat therewas nosignificant relationship betweenParent's Occupations,SourcesofDrinkingWater and DailyActivitiesand theexposureoftheschool-childrentotheinfectionofthedisease Urogenital Schistosomiasis($p>0.05$)intheState.

Table8:AssociationbetweentheRiskFactorsofUrogenitalSchistosomiasisandthePracticesof the School-agechildrenintheSenatorial Zones

Variables	anambraNorth	AnambraCentral	AnambraSouth		P-
	ValueNo.(%)	No. (%)	No. (%)	Total (%)	
PARENT'SOCCUPATION					
Farming	36(34.1)	79(19.8)	68(17.0)	283(70.9)	
Fishing	43(10.8)	19 (4.7)	22(5.0)	84(21.1)	
Artisan	32(8.0)	22 (5.5)	48(12.0)	102(25.6)	
Trading	4 (23.6)	27(6.8)	29 (7.3)	150(37.6)	
CivilServant	29(7.3)	18(4.5)	15(3.8)	62(15.5)	0.709*
Clergyman	9(2.30)	16(4.0)	12 (3.0)	37(9.3)	
SOURCE OF DRINKINGWATER					
River/Stream	62(15.5)	57(14.3)	71(17.8)	190(47.6)	
Bore Hole/Tapwater	115(28.8)	65(16.3)	73 (18.3)	253(63.4)	
RainWater	40 (10.0)	27(6.8)	23(5.8)	90(22.6)	
Sachet/Bottledwater	23(5.8)	10(2.9)	18(4.5)	51(12.8)	
					0.257#
DAILYACTIVITIES					
Swimmingin R/L/P	116(29.1)	97(24.3)	46(11.5)	259(64.9)	
Washingat R/L/P	105(26.3)	80 (20.1)	74 (18.5)	259(64.9)	
JoinParentsto Fish/Farm	148(37.1)	89 (22.3)	99(24.8)	336	
(84.21)Gofor snailcatchingbythe S/R/L/P	55(13.9)	48(12.0)	30(7.5)	113(28.3)	
					0.160^

NB:S/R/L/P=Stream/River/Lake/Pond
***Fischer'sTest;#Student'st-test;^PearsonChiSquare**

DISCUSSION

Knowledge,AttitudeandPractice (KAP)ofUgS

Thisstudyshowedthattherewashighlevelofawarenessofthediseaseurogenitalschistosomiasis(UgS) amongschool-agedchildreninthestudyarea,AnambraState.Itshowedthat65.7%ofthetotalpopulationof 399school-agedchildrenfromprimaryschoolsinthethreeselectedcommunities,eachfromthethree SenatorialzonesintheState,hadgoodknowledgeofthedisease,while34.3%hadpoorknowledgeof

UrogenitalSchistosomiasis(UgS).Thisresultagrees withtheworkof[15]whichshowedhighlevelof awarenessat91%inacommunityKAP(Knowledge,AttitudeandPractice)studyin,NampulaProvince, Mazambique.Italsoagreedwiththeworkof[3],whichreportedahighlevelofawarenessinaSchistosomiasis studyinGwakocommunity,aruralcommunityinFCT(FederalCapitalTerritory)Abuja,Nigeria.Ontheother hand,thisstudyisatvariancewiththeworkof[4],which2%awarenessofUgSwasrecordedamonga populationof290pupilsinaPrevalenceandAssociatedRiskFactorsstudyamongprimaryschoolpupilsin JidawaandZodiyaCommunitiesofJigawaState,NorthernNigeriaandtheworkof[2],whichrecordedalow awarenesslevelinastudyinsomecommunitiesinBendeLGAofAbiaState,SoutheastNigeria.Thestudyalso showed that Parentsofpupilsfrom AnambraNorth (AN) Senatorial Zone hadthe highest levelofeducationand thezonealsoshowedthehighestlevelofawarenessofUgSamongthethreeSenatorialzones.Thisisquite frankly;asurprisefindingasAnambraNorthisprominentwithriverinecommunitiesmoretheAnambraSouth andAnambracentralandalsohasmorehard-to-reachareas,assuchonewouldexpectalowpopulationlevelof educatedParents.However,thereisnosignificantassociationbetweenParents'levelofeducationandthe awarenesslevel ofthepupils ($p>0.05$).

Thenagain,while81(20.3%)pupilscorrectlyidentifiedthatthecauseof**UgS**iscontactwithinfectedwater bodiesand165(41.4%)correctlyindicatedbloodinurineasamajorsymptomofUgS,65(16.2%)believedUgS iscausedbywitchcraftand8(2.0%)pupilsattributedthesicknessasaninflictionfromthegodsinagreement with[2],whichrecorded1.6%ofthestudypopulationinsomecommunitiesinBendeLGAofAbiaStateas believingthatUgSinfectionwasasaresultofwrongdoingbyinfectedpersons.Thisevidentlyrevealedthat eveninthe21stcenturypeoplestillassociate diverseof superstitiousbeliefs to diseaseinfections.

Onthepatronageandutilizationofthedrug Praziquantelasthechoicedrugforthetreatmentandprevention, 134(33.9%)tookPraziquantelforthepurposeofpreventionofthedisease.254(63.7%)tookPraziquantel becauseitwasgiventothembytheirteachersandhealthworkersintheircommunities.107(26.8%)took PraziquantelbecausehealthworkersbroughtittotheChurch.Thisisaclearindicationthatthough33.9%took Praziquantelbecausetheywereawareitisapreventivechemotherapy,alargerpercentagetookPraziquantelon

accountoftheconfidencetheyhadonthefactthatitwasgiventothembytheirteachersandcommunityhealth workersinthierschoolorchurch.Thisgoesalongwaytotellinghowmuchefficacyandimpacttheawareness ofUgScanhaveonthecontrolofthediseasethroughintensive**Education**ofthepopulationatriskofthe diseaseespeciallyinendemiccommunities.Inallthesehowever,AS(AnambraSouth)amongthethree Senatorialzonesshowedthehighestlevelofawarenessandpatronageofthedrug Praziquantelfrom2019to 2021atapatronageandawarenesslevelabove80%.Ontheotherhand,AnambraNorth(AN)whichshowed highestnumberofeducatedparentsandhighestlevelofdiseaseawareness,showedthelowestlevelof awarenessofthedrugPZQatabove65%andlowestlevelofpatronageofPZQatabove75%,whichareboth considerablyaboveaverage.

Inthesamevein,whenweconsideredthelevelofpatronageandutilizationofPraziquantelfrom2019to2021, wefoundoutthat126(31.6%)tookPraziquantel(PZQ)once(1time)duringthis3yearperiod,98(24.6%)took PZQtwice(2times)and96(24.0%)tookitthrice(3times).However,76(19.0%)donottakePZQorhad stoppedtaking PZQ before2019dueto onebeliefor the otheror anassociated adverse eventfromprevioususe, while3(0.75%)indicatedthattheyhavenot seenPZQforthe firsttime.

Anothergermanepartofthisstudywasidentifyingtheunderlyingriskfactorsandthelevelofassociationwith thestudypopulation.Theprimaryriskfactorsinfocusinthisstudywere:Parents'occupation,sourceof drinkingwateranddailyactivities.Outoftheentirepopulation,283(70.9%)and84(21.1%)indicatedthattheir parentswereintofarmingandfishingrespectively,199(47.6%)indicatedthattheyhadcommunityriverand streamas their major sourcesof drinking water.259(64.9%) affirmed that theywereinvolved in bothswimming andwashingstreams,riverslakesorpondswithintheircommunitiesand366(84.2%)indicatedthattheyjoined theirparentsinfarmingandfishingactivities.However,thestudyshowedthattheassociatedriskfactorsof UrogenitalSchistosomiasis(UgS)didnotshowanysignificantrelationshipwiththepracticesamongthe school-agechildreninallSenatorialzones.Parent'soccupationasanassociatedriskfactordidnotshowany significantrelationshipwiththepracticesoftheschool-agechildrenasFisher'st-testshowed(p=0.709)

(Table8).ThenagainStudentst-testalsoshowedthatSourceofDrinkingwaterhadnosignificantrelationship withthepracticesoftheschool-agechildren(p=0.257)**(Table8)**.Pearson'sChisquaretesthad(p=0.160) whichalsoconfirmedthattherewasnosignificantrelationshipbetweenDailyActivitiesassociatedwithUgS andpracticesamongschool-agechildrenin thestudyarea**(Table8)**.Thesenon-significantrelationships between the associated riskfactorsof UgS,eventhoughtheywere present,whichalsoaffirmsthe endemicityof UgSinAnambraState(Ndukwe*etal*,2019),couldactuallybeasaresultofthehighawarenesslevelofrisk factorsandtransmissionofUgSinthestudyarea.Thenagain,AnambraStateasastudyareahasscarcerural communitiesbutmoreofurbanandsemi-urbanareas,whichhavebasicamenitiesfordailyliving,suchas portabledrinkingwaterinvariouscommuinities,villagesandkindreds.Also,thelifestyleintheseurbanand semi-urbanareasprominentwithinAnambraStatemakesfrequencyofhumanInteractionwithinfectionsites reasonablyloweventhoughthepupils arestillexposedtorisk factorsassociatedwithUgS.

Conclusion

AnambraState,thoughanendemicareaforUgS,hasahighlevelofawarenessofthediseaseUrogenital Schistosomiasis(UgS).Thishighlevelofawarenessisdefinitelyasaresultoftheannual MassDrug Administration,(MDA)campaignbyAnambraStateMinistryofHealthandTheCarterCentre(TCC)forthe controlofUgS.Thishasreflectedintheconsiderablyhighlevelofpatronageof Praziquantelthedrugofchoice fortreatmentandcontrolofUgS.Thenagain,AnambraStatebeingacommercialhubformanySmallScale businesses,hashelpedinvirtually urbanizingmostruralcommunities,therebymakingprovisionsforbasic amenitiessuchasportabledrinkingwater.ThisrapidurbanizationofAnambraStatehasalsoledtotheincrease inmigrationofpeoplefrom ruralcommunitiestourbanareasforgreenerpasture,wherethe possibilitytoaccess informationonUgSaboundsandalsoreducingthepopulationofpeoplewhoareatriskduetoconstant interactionwithinfectedwaterbodies.

ACKNOWLEDGEMENTS

MysinceregratitudegoestomyprojectsupervisorRev.Sr.Prof.E.T.Oparaochaforherimmenseguideand instructionsthatenabledmetopreparebetterfortheproject.Herspecialcontributionstowardsthesuccessof thisprojectcannotbeoverlooked.IowespecialthankstotheHeadofDepartment(HOD)Dr.U.M. Chukwuocha,theDeanSchoolofHealthTechnology(SOHT),Rev.Sr.Prof.E.T.OparaochaandtheDean

PostGraduateSchool(PGS)forproperorganizationofthestudyprogrammewhichhavegreatlyimprovedmy researchandacademicpursuit.

Iwishtoexpressmygratitudeinaspecialwaytomysupervisor,Rev.Sr.E.T.Oparaocha.Ialsowantto acknowledgethecontributionsofProf.A.N.Amadi,Prof.E.U.Nwoke,Prof.S.N.O.Ibe,andtheDepartmental PGcoordinatorDr.Mrs.U.W.Dozie,OthersincludeDr.C.C.Iwuala,Dr.C.C.Ebirim,Dr.F.U.UdujiandMr. G. Iwuoha.Alltheir adviceandcritic intheworkwereveryhelpful.

I alsowanttoacknowledgemyformerprojectsupervisorLateProf.O.C.Abanobi,whomIstartedthisjourney withbutitpleasedtheLordtohavehiminHisBosom.MayIalsoacknowledgeProf.O.P.Akinwale,the DirectorofResearch,NeglectedTropicalDiseaseMolecularLaboratory,NigeriaInstituteofMedicalResearch (NIMR)forhermentorshipateachstageofmyresearchadvancement.

Ialso acknowledgetheeffort ofsomeof mycolleagues, who helpmeto sourceout materials, particularlyMiss. E.P.OkoyewhovolunteeredasmyFieldAssistantandMrs.M.A.Izunwaforhercontinuousmotivation throughthetoughdaysofthiswork.Iappreciatemyfamilymembersespeciallymywife,Mrs.M.I.Ezenwenyi andchildren;Reinhard,Zuriel,ElioraandSheliaforalltheirsacrifices,prayersandgoodwisheswhich encouragedandstrengthenedme infinishingthe programme evenatthe mostdifficulttimes. Iappreciate allthe researchassistants.MayGodblessyouall.

Aboveall,everythanksgoestoALMIGHTYGODforallHISloveandcarethroughouttheperiodofthis study.

AUTHORS'CONTRIBUTIONS

'Author"**UEA**'designedthestudy,performedthestatisticalanalysis,wrotetheprotocol,andwrotethefirstdraftofthemanuscript. 'Author**OET'**and'Author**AOP**'managedtheanalysesofthestudy.'Author**UIB**'**IAM**,**OUM**,**OEP**.managedtheliteraturesearches. Allauthorsreadandapprovedthefinalmanuscript.

EthicalApproval and Consent

TheethicalapprovalforthisresearchwasobtainedfromtheHealthResearchEthicsCommitteeofAnambraState,Ministryof Health,Awka.(MH/AWK/M/321/228).
Thestudyandwrttenconsentprocessreceiveethicalapprovalfromtheheadofdepartmentofpublichealth,federaluniversityoftechnologyowerri.Furthermore,ethicalapprovalwassoughtandobtainedfromthe:anambrastateministryofhealth,headofhealthdepartmentinthethreeLGAfromeachsenatorialzoneandheadsofalltheschoolsselectedforthisstudy

REFERENCES

1.Akinboye,D.O.,Ajisebutu,J.U.,Fawole,O.,Agbolade,O.M.,Akinboye,O.O.,Amosu,Amosu,A.M., Atulomah,N.O.S.(2011):UrinarySchistosomiasis:watercontactfrequencyandinfectivityamong secondaryschoolstudentsinIbadan,Nigeria.*NigeriaJournalofparasitology.* 32(1):129-134.

2. Amoke,O.C.,Amadi,A.N.C.,Eze,J.U.(2019):AwarenessandPerceptionofUrinarySchistosomiasis amongtheinhabitantsofRuralEndemicCommunityinBendeLGA,AbiaState,Nigeria.*Animal*

534 *ResearchInternationalAfricanJournal*.Online.
535

3.Anyanti,J,Akuiyibo,S.,Onuoha,O.,Nwokolo,E.,Atagame,KandBraidE.I.(2021):Addressing SchistosomiasisinaCommunityinNigeria:ATheoriticalApproach.*InternationalJournalofTropical Disease*.Vol (4):2643-461x.

4.Balogun,J.B.,Adewale,B.A.,Balogun,S.U.(2020):PrevalenceandAssociatedRiskFactorsof UrogenitalSchistosomiasis AmongPrimarySchoolPupils inJidawaandZodiyaCommunities ofJigawaState,Nigeria.

5. Bello,A.,Jimoh,A.O.,Shittu,S.B.andHudu,S.A.(2014):Prevalenceofurinaryschistosomiasisand associatedhaemato-protenuriainWurnoRuralAreaofSokotoState,Nigeria.*OrientJournalof Medicine*.26:3-4.

6.Biu,A.A.,Kolo,H.B.andAgbadu,E.T.(2009):Prevalenceof*Schistosomahaematobium*infectionin schoolagedchildrenofKondugaLocalGovernmentArea,Northeastern,Nigeria.*InternationalJournal ofBiomedicalandHealthSciences*.5(4): 181-184.

7.Ekejindu,I.M.,Ekejindu,G.O.Aandagbai,A.(2002)Schistosomahaematobiuminfectionand nutritionalstatusofresidentsinEzi-Anam,ariverineareaofAnambraState,South-EasternNigeria. *NigerianJournal of Parasitology*,23: 131-138.

8.Ekpo,U.F.,Fafuwa,T.S.,Oluwole,A.S.,Abe,E.M.andMafiana,C.F.(2016):Prevalenceandfactors associatedwithurinaryschistosomiasisamonginfantsandpre-schoolagedchildreninsettlements aroundOyanreservoirinOgunState,Nigeria.*JournalofNaturalSciences,Engineeringand Technology*.11(1):2012-2014.

9.Ekwunife,C.A.,Agbor,V.O.,Ozumba,A.N.,Eneanya,C.I.andUkaga,C.N.(2009):prevalenceof urinary schistosomiasisinIyele-AmecommunityandenvironinNdokwaEastLocalGovernmentArea, DeltaState,Nigeria.*NigeriaJournalofparasitology*,30(1):11-14.

10.Ezeagwuna,D.A.,Ekejindu,I.M.,Onyido,A.E.,Nnamah,N.K.,Oli,A.N.,Mgbemena,I.C.,Ogolo, B.C.andOrji,N.(2012).Efficacyofartesunate inthetreatmentofurinaryschistosomiasisinanendemic areain AnambraState.*International Research Journalof Pharmacyandpharmacology*, 2(1): 034-039.

11.Gordon,C.A.,Acosta,L.P.,Gobert,G.N.,Olveda,R.M.,Ross,A.G.,Williams,G.M.,Gray,D.J.(2015): Real-TimePCR demonstrates High prevalence of Schistosomajaponicumin the Philippines: implicationsforsurveillanceandcontrol.*PLoSNeglectedTropicalDiseases*.9(1):e0003483.

12.Houmsou,R.S.,Amuta,E.U.andSar,T.T.(2012):Profileofanepidemiologicalstudyofurinary schistosomiasisintwoLocalGovernmentAreasofBenueState,Nigeria.*InternationalJournalof Medicineand BiomedicalResearch*.1(1): 39-48.

13. Mafe, M.A., Stamm, T.V., Utzinger, J. and N'goran, E.K. (2001): control of urinary schistosomiasis: an investigation into the effective use of questionnaires to identify high risk communities and individuals in Niger State, Nigeria. *European Journal of tropical Medicine and International Health*. 5(1):135-150.

13 Ndukwe, Y.E., Obiezue, R.N.N. Aguzie, I.O.N. Anunobi, J.T. and Okafor F.C. (2019): Mapping of Urinary Schistosomiasis in Anambra State, Nigeria. *Ann Global Health* 2019, May 27; 85(1):73.

13 Okoye, E.P, Ekwunife, C.A., Onyido, A.E, Obijiofor, E.C, Nzekwu, C.I, Nnatuanya I.O, Okeke, U.M., &Ude, E.A. (2024). Prevalence of Urogenital Schistosomiasis among School Age Children in Riverine Area of Anambra West LGA, Anambra State, Nigeria. *South Asian Journal of Parasitology*, *7*(2), 98–109. Retrieved from https://journalsajp.com/index.php/SAJP/article/view/17559

14 Otunbanjo, O.A, (2013): Parasites of Man and Animals, Concept Publication Limited, p269-289.

15. Rassi, C., Kajungu, D., Martins, S., Arroz, J., Tallant. J., Zegers de Beyl, C. (2016): Have You Heard of Schistosomiasis? Knowledge, Attitude and Practice in Nanpula Province, Mozambique. *Journal of Neglected Tropical Diseaes*. Dis 10.1371.

16. Ude, E.A., Akinwale, O.P., Ukaga, C.N., Ajayi, M.B., Akande, D.O., Gyang, P.V., Adeleke, M.A. and Dike, A.A. (2009): Prevalence of urinary schistosomiasis in Umuowele, Agulu community, Anambra State, Nigeria. *International Journal of Health Research*. 2(4): 347-353.

17. Ugochukwu, D.O, Onwuliri, C.O.E, Osuala F.O.U, Dozie, I.N.S, Opara, F.N and Nwenyi, C.N. (2013): Endemicity of schistosomiasis in some parts of Anambra State, Nigeria. *Journal of Medical Laboratory and Diagnosis*. Vol.4(5), pp.54-61.

Okoye, E.P, Ekwunife, C.A., Onyido, A.E, Obijiofor, E.C, Nzekwu, C.I, Nnatuanya I.O, Okeke, U.M., &Ude, E.A. (2024). Prevalence of Urogenital Schistosomiasis among School Age Children in Riverine Area of Anambra West LGA, Anambra State, Nigeria. *South Asian Journal of Parasitology*, *7*(2), 98–109. Retrieved from https://journalsajp.com/index.php/SAJP/article/view/175

18. WHO (2002): Prevention and control of schistosomiasis and soil transmitted helminthiasis *WHO Technical Report Series* No. 912:i-iv. world Health Organization (WHO), Geneva.

19. WHO (2010): Schistosomiasis. Factsheet No115. WHO. Geneva. 1-5

20. WHO (2017): Schistosomiasis. Factsheet No 115 updated Feb 2017. WHO. Geneva.