Scholars Journal of Applied Medical Sciences (SJAMS)
Abbreviated Key Title: Sch. J. App. Med. Sci.
ISSN 2320-6691 (Online)
ISSN 2347-954X (Print)

A Unit of Scholars Academic and Scientific Society, India
www.saspublishers.com

Paediatrics

ToCompareAnthropometricParametersbetweenControlGroupandMalnourished PreschoolChildren

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Original Research Article

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Article History
Received: 06.09.2018
Accepted: 16.09.2018
Published: 30.09.2018

DOI:
10.36347/sjams.2018.v06i09.045

Abstract: This study was undertaken with the aim of evaluating the nutritional status and associated nutritional deficiencies of malnourished pre-school children (1-5Years) in relation to anthropometric measurements. A total of 400 pre-school children were evaluated. All the individuals were grouped into 3 groups according to their anthropometric parameters. The anthropometric measurements and if any associated nutritional deficiencies were evaluated and compared amongst the three groups, made on the basis of presence of malnutrition and malnutrition associated with nutritional deficiencies. The present work "A crosses sectional study on nutritional status and associated nutritional deficiencies in malnourished preschool children in relation to anthropometric measurements" About 400 children in the age group of 1-5 years were studied for their Anthropometric indices. Age being the only criteria the anthropometric measurements was done to assess the nutritional status. Age was recorded by interviewing the parents or by the birth record of the child. Growth pattern of children were worked out for boys and girls separately, in respect of different body measurements were compared with international and national standards. The current study demonstrates the anthropometric parameters in association with nutritional deficiencies with rising level of malnutrition across the various study groups. All the anthropometric measurements were lower in malnourished children In comparison to their normal counterpart children. Boys had marginally better anthropometric measurements than girls.
Study Design: Cross-Sectional Study.
Keywords: Anthropometric Parameters, Malnourished, Preschool, Control.

INTRODUCTION

Anumberofstudiescarriedoutduringemergency andnon-emergency situationshave demonstratedtheassociation betweenincreasedmortality andincreasingseverityof anthropometricdeficits [1, 2].

Thereisstrongevidencethatpoorgrowthorsmaller sizeisassociated withimpaired development,anda numberofstudieshavealso demonstrated a relationship between growth status and school performance andintellectualachievement. However, thiscannotbe regardedasasimplecausalrelationshipbecause ofthe complex environmental or socioeconomicfactorsthataffectboth growthand development [3, 4].

Thepresentstudyiscarriedouttofindoutthepatter nofmalnutritionin 1-5yearschildrenanddietary factors,sothatactionsmay betakenin futuretocontrolmalnutritionincommunity.

MATERIALS& METHODS

Thepresentwork"Acrosssectionalstudy onnutritionalstatusand associatednutritional deficiencies in malnourished preschoolchildrenin relationtoanthropometricmeasurements"wascarried out atAmaltas Institute of Medical Sciences, Dewas(M.P.)betweenJan 2016 to June 2017, a cross sectional studywasconducted amongst childrenattendingbothindoorandoutdoor ofPaediatricsDepartment. About400childrenintheage group of 1-5yearswere studiedfortheir Anthropometricindices.Agebeingtheonly criteriatheanthropometric measurements was done to assess thenutritional status. Age was recordedby interviewingtheparentsor by thebirthrecordofthechild. Growthpatternof childrenwereworkedoutfor boysand girls separately, inrespectofdifferentbody measurementswerecomparedwith internationalandnationalstandards.

Inclusion Criteria

- Allchildrenaged1to5yearsattendingatAmaltas Hospital.
- Allchildren 1to5yearsof nearbyareasofAmaltas Hospital
- SubjectswhoarehavingoneormoreWHOrecommend edsignsof malnutrition.
- Subjectswhoare havinganyof thesignsof vitaminsdeficiency

Exclusion Criteria

- Nonconsentingparents.
- Subjectswithdiagnosedcongenitaldisorders.
- Subjectswithdiagnosedmajor illness.

Methodology(Material&Methods) Materials(Tools)

For Anthropometric measurement

- Electronic weighingmachine
- WHOrecommendedmeasuringtape
- Infantometer / stadiometer

Toassessthenutritionalstatusandcausativeetiolo gicalfactorsofacute malnutritioninchildren-Questionnaire

Methodology

- Completenutritionalstatusandclinicalstatuswillbedo neusing thequestionnaire andclinicalexamination.Anthropometric measurementusingthe anthropometric tools.

Measurementswere takenusingstandardizedmethods

Heightwasmeasuredforchildren(24-60months).Thechild wasmade tostand on themeasuringboard whichwas keptvertical. Shoulderbladesand buttocksof thechildwereplacedagainst the board.Withtherighthand,the headpieceontopofthechild"shead waslowered downand pushed throughthechild"shair.Once the positionwasachievedthemeasurementwasmadetothenear est 0.1cm.

Weightwasmeasuredafterminimizingclothingo nthe child using standardelectronicweighingmachine.Afterthe value was stable for about3seconds,the weightof the childwasrecorded.

Head Circumference

Headcircumferencewasmeasuredby afibreglasstape passing firmly overthesupra-orbitalridgeinfrontandthatpartofthe occiputwhichgavethemaximumdiameter.The childheadwas madesteadybyholding atthe side andneck[8].Itwas recordednearestto0.1cm.

Interpretationofnutritionalindices

Anthropometric indicescan be interpretedasfollowsi) Weight-for- height Index:usedtocomparea child"sweightwiththe expected value of a normal(NCHS/WHO reference) child of the same height. Low weight-for-heightisameasureofWasting.ii)Height-for-ageIndex: usedtocomparea child"sheightwiththe expected value of a normal (NCHS/WHOreference)childofthesameagefrom areference population.Lowheight-for–ageisameasureofStunting.iii)Weight- for-age Index:used tocompareachild"sweightwiththeexpectedvalue ofanormal (NCHS/WHO reference)childofthesameage. Low weight- for-age is a measureof underweight. iv) Low weight-for-height (Wasting or thinness): indicates in most cases a recent and severe process ofweightloss,whichis oftenassociatedwithacute starvation and/orseveredisease.However,wastingmay alsobe theresultofa chronic unfavorable condition.Providedthere is no severefoodshortage. v)Lowheight-for-age(Stunted growth):reflectsaprocess of failure to reachlinear growthpotential as aresult of suboptimalhealthand/or nutritionalconditionsvi)Lowweight-for-age(underweight): is influencedby boththeheightofthechild (height-for-age)andweight (weight-for-height).21vii)midupperarmcircumferenceisagood predictorofimmediateriskofdeath.Itisusedforrapidscreeni ngof acute malnutrition.

Theanthropometricdatasinpresentstudy werecomparedwiththe NationalGrowthData andwiththe internationalNCHS standard data. Literacy statusofmotherwasrecorded. Nutritionalstatuswasgraded according toZ-score classificationandI.A.Pclassification.The reference standardusedwasNationalCentreofHealthStatistics(NCHS)forZ scoreclassificationandHarvardStandardforI.A.P.classification. Inthis study Z-scorewerecalculatedforallthreeindices,weight-for-age (underweight),height-for-age(stunting)andweight-for-height (wasting) byusingNCHS referencestandard.

RESULTS & OBSERVATIONS

Table-1:Comparisonof anthropometric parameter (Head circumference) between NormalstudiedgroupandMalnourishedGroupinallagegroups

Age in Years	Normalgroup		Malnourished group		P-value
	Boys	Girls	Boys	Girls	
1–2	44.2±1.2	44.1±1.3	43.2±0.66	42.7±0.3	0.00

2–3	46.3±1.7	45.8±0.6	45.50±0.8	44.6±0.70	0.00
3–4	47.5±1.8	47.1±1.01	46.4±0.9	45.3±0.90	0.00
4–5	48.5±0.6	48.1±2.1	47.0±0.80	46.0±0.70	0.05

Thistableshows the Headcircumference in differentages of pre-school malnourishedchildrenand normalgroup.Therewassignificant lower value of allmeasurementsthan their normalcounterpartchildren (P<0.05).

Table-2:Comparisonof anthropometric parameter (Weight)between Normalstudiedgroup and malnourished groupinallage groups

Age in Years	Normalgroup		Malnourished group		P-value
	Boys	Girls	Boys	Girls	
1–2	8.2 ±1.7	7.6 ±1.6	7.3 ±1.0	7.2 ±0.5	0.00
2–3	9.9 ±1.82	9.2 ±1.5	8.6 ±1.3	8.4 ±1.0	0.05
3–4	12.2±1.7	10.8±1.8	10.7±1.8	10.3±1.7	0.00
4–5	14.4±2.2	14.2±1.6	13.7±1.5	13.3±1.3	0.001

Thistableshowsthe weightindifferentagesof pre-schoolmalnourished childrenand normalgroup.Therewas significant lowervalue ofall measurementsthantheir normalcounterpartchildren(P<0.05).

Table-3:Comparisonof anthropometric parameter (Height)Between Normalstudiedgroup and malnourished groupinallage groups

Age in Years	Normalgroup		Malnourished group		P-value
	Boys	Girls	Boys	Girls	
1–2	72.6±3.39	72.4±3.9	71.6±4.5	70.5±5.1	0.00
2–3	79.3±4.6	79.9±3.3	78.8±3.5	76.6±4.9	0.00
3–4	90.6±3.81	89.1±4.08	86.1±4.1	86.8±3.8	0.05
4–5	103.9 ±4.21	94.3±3.75	92.4±4.6	92.1±4.2	0.00

Thistable shows the heightin differentages of pre-schoolmalnourished childrenand normalgroup.Therewas significant lowervalue ofall measurementsthantheir normalcounterpartchildren(P<0.05).

DISCUSSION

Nutritional anthropometry isconcernedwiththemeasurementof variationof the physicaldimensionandgrosscompositionof the humanbody atdifferent age levelsand isconsideredtobe,the bestmethodforassessmentof malnutrition.Ithastheadvantageof beingeasy toperform,rousingno antagonismandrequiresonlysimple apparatus.Seriousmalnutritionisall around usandyet itis not obvious,for itexhibitstheIceberg phenomenon".ByAnthropometricassessmentonecandete ctthesub-clinicalmalnutritionvery easily.Anthropometricmeasurementsobtained inchildrenare usuallycomparedwiththatofa"reference standard". Thoughthe datacollectedby IndianCouncilofMedicalResearch (I.C.M.R. in differentpartsofthecountry providevaluable information regardingcommunity averageforweightandheight,thesecannotbeused asreference standard because thesewere not obtainedonwell to doand wellfedIndianchildrenandhencedonotreflect optimalgrowth(120). W.H.O. hasnow recommendedNationalCentreforHealth Statistics (N.C.H.S.)dataforreference standard.In ourpresentstudy wefoundthe prevalenceofmalnourishmenttobe67.5%byIAPClassifica tionand 68.7% by WHOClassification.Prevalenceofundernutritioningirlsb y IAPClassification(51.8%)wasmorethanboys(48.1%).A study by BhupeshwariPatel,DulariGandhialsoshowedWHOclassi fication classified 90% ofchildrenundernourishedwhereasIAPclassification classified80%ofchildrenasundernourished.Accordingto WHOcriteria 32%and inIAPcriteria only10% children were severelyundernourished. Whencompared,thiswasastatisticallysignificant(p=0.000)difference inmalnutritionby theseclassifications.Inourstudy Amongstgirlsthe highestprevalence of undernutritionwas seeninupto3yearsagegroup, whereasinboysthemaximumprevalencewasseenin1-2yearsage group.

CONCLUSION

Thecurrent study demonstratesthe anthropometric parametersin associationwithnutritional deficiencieswithrising level ofmalnutrition acrossthe variousstudygroups.

Allthe anthropometric measurementswere lower inmalnourished childrenIncomparisontotheirnormalcounterpartchildren boyshadmarginallybetter anthropometric measurementsthangirls.

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