

Evaluation of Dental Arch Width of Garhwali Population Having Normal Occlusion

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Abstract

Objective: The study was conducted to determine the arch width of upper and lower arch in Garhwali population and to compare the obtained arch width to other population. **Materials and Methods:** Sample of 70 subjects, 35 male and 35 female, was taken and arch width measurements were done on each tooth of maxilla and mandible from central incisor to 2nd molar. **Results:** Statistically significant difference was found in U2MC ($P = 0.0001$), U3MC, U3CL, and U3CB ($P = 0.0002$, 0.007 , and 0.0011), respectively, U5CL and U5CG ($P = 0.0005$ and 0.0001), respectively, U6MC, U6CC, U6ML, U6MG, U6DL, U6DB, and U6MB ($P = 0.027$, 0.0066 , 0.0001 , 0.057 , 0.030 , and 0.0004), and U7CB ($P = 0.0002$). Statistically no significant difference analysis was found for U4MC, U4CL, U4CG, and U4CB ($P = 0.0004$, 0.038 , 0.0001 , and 0.0061), respectively, U5MC, U5CB and U7CC, U7ML, U7MG, U7DL, U7DB, and U7MB. **Conclusion:** Significant differences exist in maxillary arch width of male and female of Garhwali population. Maxillary intercanine width is decreased in comparison to Marathi and South Chinese, increased than Caucasians. Intermolar width is decreased than Punjabi and South Chinese population and increased than Caucasians population, however, no significant differences were found in intercanine width and intermolar width was found on comparison to North Indian population. In mandible, intermolar width in Garhwali population is decreased in comparison to North Indian, Punjabi, and Caucasians population and increased than South Chinese population.

Keywords: Dental arch form, Mandibular arch, Maxillary arch, Occlusion.

INTRODUCTION

In the clinical dental field, arch size and shape are of particular interest to orthodontists and prosthodontists. In the anthropologic field, studies on dental arches have been conducted directly or indirectly. Most studies used the dimension of the arch across the permanent canines, premolars, and first molars, at the cusp tips, central fossae, or contact points, or the greatest distance between buccal surfaces. Dental arch widths between contralateral teeth have been measured in many ways: Between the most labial points or the most palatal or lingual points or as a calculated mean between the most labial and palatal measurements.^[1]

“Garhwali people” are the ethnolinguistic group who primarily live in the Garhwal Himalayas of the northern Indian state of Uttarakhand. Any person who has ancestral Garhwali roots or lives in Garhwal and has a Garhwali heritage is called a Garhwali. The present study was conducted with the aim to evaluate the dental arch width of the Garhwali population across the buccal cusps, central fossae, and lingual cusps and whether there is a significant among the male and female subjects of Garhwali population.

The objectives of the study were to determine the arch width of the upper and lower arch in the Garhwali population, evaluate the inter incisor, inter canine, interpremolar, inter 1st molar, and inter 2nd molar width in Garhwali population, and compare sexual dimorphism of arch width and compare the arch width of Garhwali population with other population.

MATERIALS AND METHODS

The samples for the study were obtained from dental camps conducted in the local school and colleges of different Garhwali regions by the following inclusion and exclusion criteria:

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Inclusion criteria

The following criteria were included in the study:

- Subjects should be of Garhwal ethnic origin (age 14–17 years)
- Ideal Angles Class I molar and canine relation.

Exclusion criteria

The following criteria were excluded from the study:

- Any cavity or restoration,
- Any prosthesis or previous history of orthodontic treatment,
- Presence of crowding, spacing, rotations, and crossbite.

After the confirmation of ethnicity of the sample, records were made. Initially, a total 1245 number of subjects were screened. Based on their ethnic origin, malocclusion, and denying for participation in the study, 1175 subjects were excluded from the study. In the end, a total of 70 samples were selected for study purpose and segregated according to gender into equal number of 35 males and 35 females. All the study casts were prepared with base, and measurement of dental arch width, as illustrated in (Figure 1) (Table 1), was done using sliding digital caliper.

RESULTS

The mean with standard deviation was obtained for each group (Tables 2 and 3) and comparison of the arch width dimensions between males and female subject of Garhwali population was done using unpaired “*P*” test and descriptive statistical analysis was obtained (Table 4).

Statistically significant difference was found in U2MC ($P = 0.0001$), U3MC, U3CL, and U3CB ($P = 0.0002$, 0.007, and 0.0011), respectively, U5CL and U5CG ($P = 0.0005$ and 0.0001), respectively, U6MC, U6CC, U6ML, U6MG, U6DL, U6DB, and U6MB ($P = 0.027$, 0.0066, 0.0001, 0.057, 0.030, and 0.0004), and U7CB ($P = 0.0002$). Statistically no significant difference analysis was found for U4MC, U4CL, U4CG, and U4CB ($P = 0.0004$, 0.038, 0.0001, and 0.0061), respectively, U5MC, U5CB, and U7CC, U7ML, U7MG, U7DL, U7DB, and U7MB. Therefore, on comparison, strong statistical significant differences were found in maxillary arch width of male and female Garhwali population (Table 4). No statistical significant differences were found in mandibular arch width among males and females of Garhwali population (Table 4).

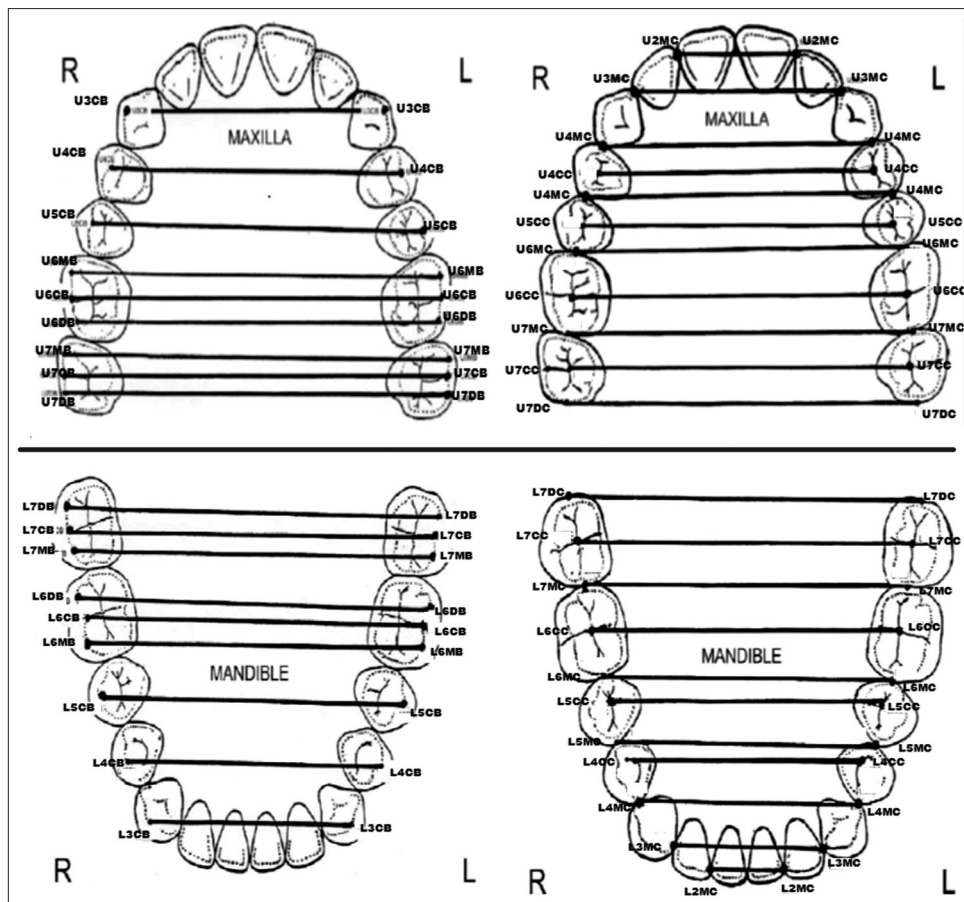


Figure 1: Diagrammatic illustration of dental arch width measurement landmarks

Table 1: Landmarks for measurement of maxillary and mandibular arch widths

*References	Location of maxillary landmarks
U7CC	Central fossa of tooth 17 and tooth 2
U7ML	Mesial palatal cusp of tooth 17 and tooth 27
U7MG	Most prominent palatal point at the gingival margin opposite the mesial palatal cusp of tooth 17 and tooth 27
U7DL	Distal palatal cusp of tooth 17 and 27
U7DC	Estimated distal contact point between tooth 17 and tooth 18 and tooth 27 and tooth 28
U7DB	Distal buccal cusp of tooth 17 and tooth 27
U7CB	Buccal groove at the buccal and occlusal surface interface of tooth 17 and tooth 27
U7MB	Mesial buccal cusp of tooth 17 and tooth 27
U7MC	Contact points between tooth 16 and tooth 17 and tooth 26 and tooth 27
U6CC	Mesial fossa of tooth 16 and tooth 26
U6ML	Mesial palatal cusp of tooth 16 and tooth 26
U6MG	Most prominent palatal point at the gingival margin opposite the mesial palatal cusp of tooth 16 and tooth 26
U6DL	Distal palatal cusp of tooth 16 and 26
U6DB	Distal buccal cusp of tooth 16 and tooth 26
U6CB	Buccal groove at the buccal and occlusal surface interface of tooth 16 and tooth 26
U6MB	Mesial buccal cusp of tooth 16 and tooth 26
U6MC	Distal contact point between tooth 15 and tooth 16 and tooth 25 and tooth 26
U5CG	Central Fossa of tooth 15 and tooth 25
U5CL	Palatal cusp of tooth 15 and tooth 25
U5CG	Most prominent palatal point at the gingival margin opposite the palatal cusp of tooth 15 and tooth 25
U5CB	Buccal cusp of tooth 15 and tooth 25
U5MC	Contact points between tooth 14 and tooth 15 and tooth 24 and tooth 25
U4MC	Central fossa of tooth 14 and tooth 24
U4CL	Palatal cusp of tooth 14 and 24
U4CG	Most prominent palatal point at the gingival margin opposite the palatal cusp of tooth 14 and tooth 24
U4CB	Buccal cusp of tooth 14 and tooth 24
U4MC	Contact points between tooth 13 and tooth 12 and tooth 23 and tooth 22
U3CL	Lingual gingival margin of tooth 13 and tooth 23
U3CB	Cusp Tip of tooth 13 and tooth 23
U3MC	Contact points between tooth 12 and tooth 13 and tooth 22 and tooth 23
U2MC	Contact points between tooth 11 and tooth 12 and tooth 21 and tooth 22
*U indicates upper, 1: Central incisor, 2: Lateral incisor, 3: Canine, 4: First premolar, 5: Second premolar, 6: First molar, 7: Second Molar, D: Distal, C: Central, M: Mesial, B: Buccal, L: Lingual, G: Gingival	
*References	Location of mandibular landmarks
L7CC	Central fossa of tooth 37 and tooth 47
L7DL	Distal palatal cusp of tooth 37 and tooth 47
L7DG	Most prominent point at the gingival margin opposite the distal lingual cusp of tooth 37 and tooth 47
L7ML	Mesial lingual cusp of tooth 37 and 47
L7MG	Most prominent point at the gingival margin opposite the mesial lingual cusp of tooth 37 and tooth 47
L7MC	Contact points between tooth 36 and tooth 37 and tooth 46 and tooth 47

Table 1: Landmarks for measurement of maxillary and mandibular arch widths

*References	Location of maxillary landmarks
L7MB	Mesial buccal cusp of tooth 37 and tooth 47
L7CB	Buccal groove at the buccal and occlusal surface interface of tooth 37 and tooth 47
L7DB	Distal buccal cusp of tooth 37 and tooth 47
L7DC	Estimated distal contact point between tooth 37 and tooth 38 and tooth 47 and tooth 48
L6CC	Central fossa of tooth 36 and tooth 46
L6DL	Distal lingual cusp of tooth 36 and tooth 46
L6ML	Mesial lingual cusp of tooth 36 and 46
L6MG	Most prominent point at the gingival margin opposite the mesial lingual cusp tooth 36 and tooth 46
L6MC	Contact points between tooth 35 and tooth 36 and tooth 45 and tooth 46
L6MB	Mesial buccal cusp of tooth 36 and tooth 46
L6CB	Buccal groove at the buccal and occlusal surface interface of tooth 36 and tooth 46
L6DB	Distal buccal cusp of tooth 35 and tooth 45
L5CC	Central fossa of tooth 35 and tooth 45
L5CL	Lingual cusp of tooth 35 and tooth 45
L5CG	Most prominent lingual point at the gingival margin opposite the tooth 35 and tooth 45
L5MC	Contact points between tooth 34 and tooth 35 and tooth 44 and tooth 45
L5CB	Buccal cusp of tooth 35 and tooth 45
L4CC	Distal fossa of tooth 34 and 44
L4CL	Lingual cusp of tooth 34 and tooth 44
L4CG	Most prominent lingual point at the gingival margin opposite the lingual cusp of tooth 34 and tooth 44
L4CB	Buccal Cusp of tooth 34 and tooth 44
L4MC	Contact points between tooth 33 and tooth 34 and tooth 43 and tooth 44
L3CB	Cusp Tip of tooth 33 and tooth 43
L3MC	Contact points between tooth 32 and tooth 33 and tooth 42 and tooth 43
L2MC	Contact points between tooth 31 and tooth 32 and tooth 41 and tooth 42

*L indicates upper, 1: Central Incisor, 2: Lateral incisor, 3: Canine, 4: First premolar, 5: Second premolar, 6: First molar, 7.: Second molar, D: Distal, C: Central, M: Mesial, B: Buccal, L: Lingual, G: Gingival

DISCUSSION

The size and form of the dental arches can have considerable implications in orthodontic diagnosis and treatment planning. It has also been shown that individual dental arch dimensions change with age. It also affects the space available, dental esthetics, and stability of the dentition.^[2] The young group of Garhwali was chosen because of its habitat in hilly area and less information is available on them regarding arch width measurement. The study was conducted for obtaining measurements of arch width in maxilla and mandible to minimize the alteration of dental arch dimensions because of attrition, restoration, or caries. Efforts were made to ensure randomization and adequate sample size to ensure validity and adequate clinical significance of the prediction equations.^[3-4]

Comparisons of data on dental arch dimensions from different studies are affected by the fact that it is not easy to tabulate

Table 2: Mean value of maxillary arch width for male and female $n=3$

Tooth No.	Male ($n=35$)						Female ($n=35$)					
	Mean	S.D	SEM	C.O.V	Range	Median	Mean	S.D	SEM	C.O.V	Range	Median
Tooth 11–21												
U2MC	17.66	0.96	0.16	0.05	15.47–19.43	17.8	16.7	0.65	0.11	0.03	15.58–17.98	16.87
Tooth 12–22												
U3MC	30.1	1.75	0.29	0.05	27–33.96	29.77	28.73	1.04	0.17	0.03	27.16–31.06	28.65
Tooth 13–23												
U3CL	25.27	1.43	0.24	0.05	20.5–27.25	25.42	24.37	1.31	0.22	0.05	22.24–27.64	24.08
U3CB	35.2	1.78	0.3	0.05	31.04–40.16	34.98	33.97	1.17	0.19	0.03	32.02–37.11	34.02
Tooth 14–24												
U5MC	45.28	2.15	0.36	0.04	41.01–48.38	45.44	44.43	2.17	0.36	0.04	42.02–54.95	43.99
U4MC	37.22	1.82	0.3	0.04	32.63–40.27	36.76	35.69	1.61	0.27	0.04	32.37–38.97	35.89
U4CL	31.99	3.14	0.53	0.09	27.38–39.62	32.18	30.69	1.85	0.31	0.06	28.04–33.76	30.42
U4CG	29.39	2.25	0.38	0.07	25.93–38.65	29.62	27.66	1.04	0.17	0.03	25.05–29.54	27.55
U4CB	42.85	2.24	0.37	0.05	36.88–46.7	43.26	41.07	1.465	0.24	0.03	38.21–44.34	41.47
Tooth 15–25												
U6MC	50.62	2.44	0.41	0.04	45.77–53.77	50.71	48.84	1.72	0.29	0.03	45.72–52.57	48.95
U5CC	42.4	2.18	0.36	0.05	38.67–47.48	42.18	41.78	1.4	0.23	0.03	38.16–44.09	42.12
U5CL	36.75	1.76	0.29	0.04	34.1–41.45	36.59	35.21	1.78	0.3	0.05	32.11–38.27	34.98
U5CG	34.76	2.22	0.37	0.06	29.83–39.93	35.19	31.8	2.13	0.36	0.06	28.23–39.58	31.8
U5CB	46.73	2.88	0.48	0.06	42.51–53.18	45.98	46.75	1.58	0.26	0.03	41.65–49.42	46.62
Tooth 16–26												
U7MC	54.26	3.06	0.51	0.05	47.59–59.8	54.61	54.25	2.16	0.36	0.03	48.29–57.89	53.98
U6CC	48.99	3.32	0.56	0.06	42.64–55.98	49.02	47.52	1.98	0.33	0.04	42.68–51.68	47.63
U6ML	42.79	3.06	0.51	0.07	36.22–48.13	43.23	41.04	2.07	0.35	0.05	34.97–44.48	40.82
U6MG	38.98	4.2	0.71	0.1	30.75–47.65	39.14	34.2	2.02	0.34	0.05	30.2–37.82	34.57
U6DL	44.24	3.27	0.55	0.07	37.9–52.46	43.97	42.89	2.52	0.42	0.05	35.96–48.38	43.45
U6DB	56.12	3.21	0.54	0.05	43.8–60.19	56.82	54.62	2.43	0.41	0.04	48.53–57.73	55.29
U6CB	54.48	3.85	0.65	0.07	38.07–59.65	54.65	53.77	2.35	0.39	0.04	47.81–57.93	54.23
U6MB	55.43	2.35	0.39	0.04	48.83–59.2	56.04	53.42	2.13	0.36	0.03	46.92–55.92	53.87
Tooth 17–27												
U7CC	54.02	2.17	0.36	0.04	50.26–59.03	53.62	53.71	2.14	0.36	0.03	50.26–58.45	52.89
U7ML	48.33	1.09	0.18	0.02	45.62–50.75	48.48	48.07	1.41	0.23	0.02	43.51–50.75	48.21
U7MG	42.26	1.6	0.27	0.03	37.43–43.98	42.65	41.94	1.92	0.32	0.04	36.69–43.98	42.33
U7DL	50.6	1.24	0.21	0.02	46.33–51.98	50.88	50.34	1.69	0.28	0.03	45.12–51.93	50.66
U7DB	60.18	0.77	0.13	0.01	57.99–61	60.34	59.96	1.18	0.19	0.01	54.86–60.95	60.27
U7CB	58.59	0.74	0.12	0.01	57.01–59.86	58.65	58.44	1.04	0.17	0.01	54.48–59.86	58.63
U7MB	58.09	0.74	0.12	0.01	56.79–59.19	58.14	57.86	0.96	0.16	0.01	54.31–59.19	58.02

all data on different landmarks. Moreover, different authors chose different sample groups for measurement. This study uses definitions for dental widths that allow different studies to be compared. On comparison with other population, the maxillary intercanine width of Garhwali (mean M = 35.2 mm and mean F = 33.97 mm) was less in comparison to Marathi (mean M = 36.11 mm and mean F = 34.78 mm) and South Chinese (mean M = 36.2 mm and mean F = 35.09 mm) and increase in relation to Caucasians (mean M = 34.05 mm and mean F = 32.77 mm).^[1,5-7] On comparison with South Chinese (mean M = 38.37 mm and mean F = 37.26 mm), the interpremolar widths at fissure and buccal cusp tips width were decreased in comparison to Garhwali population (mean M = 37.22 mm and mean F = 35.66 mm) and at fissure were increased in relation to Caucasians population (mean

M = 35.44 mm and mean F = 33.55 mm) with respect to male and female.^[1,5-7] Inter-first molar widths (mesial fossa) in maxilla and mandible were found to be decreased on comparison with Punjabi and South Chinese population. In maxilla, it was more than Caucasian and same as that of North Indian population. In mandible, it was increased in comparison to Caucasian and North Indian population.^[1,8-10] On comparison of inter-second molar widths, the Garhwali population was increased for both the sexes and arches as compared to the Chinese population. The Garhwali occupied the median position when ranked in order against the quoted literature.^[3-4]

It is interesting to note that Garhwali dental arches appear to be smaller when compared with those of Chinese

Table 3: Mean value of mandibular arch width for male and female $n=35$

Tooth No.	Male ($n=35$)						Female ($n=35$)					
	Mean	S.D	SEM	C.O.V	Range	Median	Mean	S.D	SEM	C.O.V	Range	Median
Tooth 31–41												
L2MC	11.59	0.34	0.05	0.03	10.88–12.32	11.55	11.57	0.34	0.05	0.03	10.88–12.32	11.52
Tooth 32–42												
L3MC	23.48	1.61	0.27	0.06	20.54–26.18	23.71	23.3	1.68	0.28	0.07	20.54–26.18	23.58
Tooth 33–43												
L3CL	19.84	0.94	0.15	0.04	18.53–21.72	19.38	19.81	0.92	0.15	0.04	18.53–21.72	19.38
L3CB	28.05	1.64	0.27	0.05	25.02–29.73	28.96	27.88	1.67	0.28	0.06	25.02–29.73	28.86
Tooth 34–44												
L5MC	39.97	1.4	0.23	0.03	37.51–41.94	40.75	39.84	1.45	0.24	0.03	37.51–41.94	40.74
L4MC	32.71	2.17	0.36	0.06	29.47–36.47	31.92	32.54	2.17	0.36	0.06	29.47–36.47	31.81
L4CL	28.87	1.79	0.3	0.06	25.18–30.95	29.58	28.74	1.75	0.29	0.06	25.18–30.85	29.54
L4CG	26.15	1.69	0.28	0.06	22.38–29.59	26.45	26.06	1.71	0.29	0.06	22.38–29.59	26.3
L4CB	36.92	2.18	0.36	0.05	33.79–40.83	36.38	36.72	2.17	0.36	0.05	33.79–40.83	36.32
Tooth 35–45												
L6MC	45.42	2.02	0.34	0.04	41.45–47.6	46.09	45.25	2.08	0.35	0.04	41.45–47.6	45.9
L5CC	38.01	1.88	0.31	0.04	35.13–40.88	38.08	37.84	1.89	0.32	0.05	35.13–40.88	37.48
L5CL	33.43	1.99	0.33	0.05	29.92–35.96	34.32	33.25	2.03	0.34	0.06	29.92–35.96	34.27
L5CG	30.97	1.99	0.33	0.06	26.33–32.99	31.33	30.87	1.98	0.33	0.06	26.33–32.99	31.19
L5CB	42.23	1.83	0.3	0.04	39.22–44.91	42.81	42.05	1.81	0.3	0.04	39.22–44.91	42.18
Tooth 36–46												
L7MC	53.77	2.94	0.49	0.05	48.02–57.68	54.45	53.54	2.94	0.49	0.05	48.02–57.68	54.4
L6CC	45.47	2.77	0.46	0.06	39.46–49.16	46.51	45.2	2.87	0.48	0.06	39.46–49.16	46.51
L6ML	37.07	2.37	0.4	0.06	31.14–40.08	37.39	36.87	2.49	0.42	0.06	31.14–40.08	37.37
L6MG	34.49	2.82	0.47	0.08	28.94–37.6	36.06	34.25	2.81	0.47	0.08	28.94–37.47	36.01
L6DL	39.07	2.45	0.41	0.06	34.08–41.36	40.39	38.86	2.56	0.43	0.06	34.08–41.36	40.39
L6DB	51.38	2.08	0.34	0.03	47.02–53.63	52.5	51.21	2.07	0.34	0.04	47.02–53.63	52.46
L6CB	51.65	3.74	0.63	0.07	46.01–56.86	49.67	51.43	3.72	0.62	0.07	46.01–56.86	49.67
L6MB	47.87	5.8	0.98	0.12	34.62–55.43	47.53	47.65	5.69	0.96	0.11	34.62–55.43	47.53
Tooth 37–47												
L7CC	49.21	2.28	0.38	0.04	44.14–50.98	50.22	49.03	2.47	0.41	0.05	44.14–50.98	50.22
L7ML	42.78	2.26	0.38	0.05	38.09–45.23	43.55	42.6	2.36	0.39	0.05	38.09–45.23	43.52
L7MG	40.27	1.6	0.27	0.03	36.99–41.96	40.79	40.22	1.65	0.28	0.04	36.99–41.96	40.79
L7DL	45.67	2.39	0.4	0.05	40.72–47.98	46.48	45.51	2.47	0.41	0.05	40.72–47.98	46.48
L7DB	55.45	1.51	0.25	0.02	52.6–57.53	55.81	55.4	1.55	0.26	0.02	52.6–57.53	55.7
L7CB	54.21	1.7	0.28	0.03	50.47–55.9	54.74	54.06	1.79	0.3	0.03	50.47–55.9	54.71
L7MB	52.81	1.04	0.17	0.01	50.3–53.91	53.2	52.73	1.1	0.18	0.02	50.3–53.91	53.2

populations, with an intercanine width difference of about 3 mm in the maxilla and 2 mm in the mandible. It is also found that the intermolar width and intercanine width of Garhwali population were similar to those to that of North Indian population.^[10] A strong significant sexual dimorphism exists between the male and female groups of Garhwali population.

Maxillary arch width is increased in males than that of females of Garhwali population. This could be the cause of fact that the diet of the Garhwali population is similar to that of persons in Southeast Asia, with the staple component of refined rice. Studies suggest that the maxillary intermolar width in males is increased than in females in southeast population. It is also documented

the overall size of maxilla and mandible is increased in Southeast Asian population as per genetics when compared to other populations. Garhwal is in close geographical relation to Nepal in which the maxillary arch width is documented to be increased when compared to other populations along with sexual dimorphism. This is in accordance with the present study, thus supporting the fact that the intermolar and intercanine width of male Garhwali population is increased than that of females and to other population of different ethnic background. This is different from the other populations, for whom the major carbohydrate intake is wheat. Further study is needed to investigate the association between diet and dental arch width within different populations.

Table 4: Student “t” test for comparison of arch widths between male and female

	Maxilla						Mandible						
	P value	Mean diff.	95 % CI	t	df	SE of diff.	P value	Mean diff.	95 % CI	t	df	SE of diff.	
U2MC	0.0001	0.89	0.49–1.28	4.54	68	0.196	L2MC	0.806	0.02	−0.14–0.18	0.24	68	0.081
U3MC	0.0002	1.37	0.68–2.05	3.98		0.344	L3MC	0.64	0.18	−0.6–0.96	0.45	68	0.393
U3CL	0.007	0.9	0.24–1.55	2.74		0.32	L3CL	0.89	0.03	−0.41–0.47	0.13	68	0.222
U3CB	0.0011	1.23	0.51–1.94	3.41		0.36	L3CB	0.668	0.17	−0.61–0.95	0.42	68	0.396
U5MC	0.104	0.85	0.18–1.88	1.64		0.51	L5MC	0.704	0.13	−0.54–0.8	0.38	68	0.341
U4MC	0.0004	1.53	0.71–2.34	3.72		0.41	L4MC	0.744	0.17	−0.86–1.2	0.32	68	0.51
U4CL	0.038	1.3	0.070–2.52	2.11		0.61	L4CL	0.759	0.13	−0.71–0.97	0.3	68	0.423
U4CG	0.0001	1.73	0.89–2.56	4.12		0.41	L4CG	0.825	0.09	−0.72–0.9	0.22	68	0.406
U4CB	0.0061	1.28	0.37–2.18	2.83		0.45	L4CB	0.701	0.2	−0.83–1.23	0.38	68	0.52
U6MC	0.0008	1.78	0.77–2.78	3.52		0.5	L6MC	0.729	0.17	−0.8–1.14	0.34	68	0.49
U5CC	0.1614	0.62	0.25–1.49	1.41		0.43	L5CC	0.707	0.17	−0.72–1.06	0.37	68	0.451
U5CL	0.0005	1.54	0.69–2.38	3.63	68	0.42	L5CL	0.709	0.18	−0.17–1.13	0.37	68	0.481
U5CG	0.0001	2.96	1.92–3.99	5.69		0.52	L5CG	0.833	0.1	−0.84–1.04	0.21	68	0.475
U5CB	0.971	0.02	1.08–1.12	0.03		0.55	L5CB	0.68	0.18	−0.68–1.04	0.41	68	0.435
U7MC	0.987	0.01	1.25–1.27	0.01		0.63	L7MC	0.744	0.23	−1.17–1.63	0.32	68	0.703
U6CC	0.027	1.47	0.166–2.77	2.24		0.65	L6CC	0.69	0.27	−1.07–1.61	0.4	68	0.674
U6ML	0.0066	1.75	0.50–2.99	2.8		0.62	L6ML	0.731	0.2	−0.95–1.35	0.34	68	0.581
U6MG	0.0001	4.78	3.20–6.35	6.06		0.78	L6MG	0.072	0.24	−1.1–1.58	0.35	68	0.673
U6DL	0.057	1.35	0.04–2.74	1.93		0.69	L6DL	0.727	0.21	−0.98–1.4	0.35	68	0.599
U6DB	0.03	1.5	0.14–2.85	2.2		0.68	L6DB	0.729	0.17	−0.8–1.14	0.34	68	0.489
U6CB	0.35	0.71	0.81–2.23	0.93		0.76	L6CB	0.805	0.22	−1.55–1.99	0.24	68	0.892
U6MB	0.0004	2.01	0.94–3.07	3.74		0.53	L6MB	0.873	0.22	−2.52–2.96	0.16	68	1.372
U7CC	0.549	0.31	0.71–1.33	0.601		0.51	L7CC	0.752	0.18	0.953–1.313	0.316	68	0.568
U7ML	0.391	0.26	0.34–0.86	0.86		0.3	L7ML	0.745	0.18	−0.92–1.28	0.32	68	0.552
U7MG	0.451	0.32	0.52–1.16	0.75		0.42	L7MG	0.898	0.05	−0.72–0.82	0.12	68	0.388
U7DL	0.46	0.26	0.44–0.96	0.73		0.35	L7DL	0.783	0.16	−0.99–1.31	0.27	68	0.581
U7DB	0.358	0.22	0.25–0.69	0.92		0.23	L7DB	0.891	0.05	−0.67–0.77	0.13	68	0.366
U7CB	0.0002	0.85	1.28–0.41	3.93		0.21	L7CB	0.72	0.15	−0.68–0.98	0.35	68	0.417
U7MB	0.265	0.23	0.178–0.638	1.12		0.02	L7MB	0.755	0.08	−0.43–0.59	0.31	68	0.256

CONCLUSION

Dental arch of male and female of Garhwali population occupies a median position among the compared Indian population. Maxillary intercanine width is decreased in comparison to Marathi and South Chinese, increased than Caucasians. Intermolar width is decreased than Punjabi and South Chinese population and increased than Caucasians population. However, no significant differences were found in intercanine width and intermolar width as compared to the North Indian population. In mandible, intermolar width in Garhwali population is decreased in comparison to North Indian, Punjabi, and Caucasians population and increased than South Chinese population.

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