

Prevalance Of Being Barefoot at Home, School and During Sports Among Indian Adolescents: A Cross Sectional Survey

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Abstract:

BACKGROUND AND PURPOSE: In recent years, barefoot running has received a lot of attention in the footwear biomechanics literature; it serves to reduce the occurrence of overuse injury and is also associated with comfort when compared to conventional shoes, unless minimalist shoes aim to mimic the mechanism of barefoot locomotion. In different parts of the world, the prevalence of barefoot wear varies widely.

METHODOLOGY: A total of 510 people were sampled for analysis during everyday activities, school, and sports to assess the prevalence of the barefoot population. Students were asked how much they were barefoot around the house, during sports, and at school to identify students and non-students and categorise them by ethnicity as being barefoot or shod. Participants were also asked if leg discomfort had prevented them from jogging in the preceding 12 months. If you're having trouble walking, consider about the shoes you're wearing the most.

RESULT AND CONCLUSION: In our study (n=510), we discovered that ethnicity divided 86.9% of students and 13% of nonstudents into two subcategories: rural 42.6 percent and urban 57.4%. In which 32.3% were classified as generally barefoot, 1,490,679 reported being barefoot most of the time at home, and more than half of the sample reported going barefoot at least half of the time while sport (1,090,850, 17,270 t test = P0.05). There was no leg soreness that prevented them from running, according to 78.7% of the participants. and 50.8% of those who walked reported no discomfort. The prevalence of leg pain differed between habitual and shod wear respectively. Also, we find out 51.9% participant find comfort in flat slippers.

Index Terms: Barefoot, barefoot questionnaire survey, rural and urban frequency test, habitual barefoot.

I. INTRODUCTION

In Footwear literature, Barefoot locomotion present a self-contradiction that has been used by athletes and coaches for many years. Based on the supposition that an increased incidence of running injuries are associated with running shoes (jonnie, 2012) .

Bipedal walking is one of the rare abilities of humans, and their foot has developed to support such a unique stride. There are 26 bones, 33 joints, and 19 muscles in the human foot, all on their own. (Lieberman, 2012) .

When created in the shape of an arch, a segmented structure can support weight in the most efficient way. The medial longitudinal, lateral longitudinal, and transverse arches are the three types of arches that are present at birth on the foot. The medial longitudinal arch is the biggest and most clinically significant of the three arches. (V, 2016). These characteristics demonstrate that the human foot is involved in balance and movement control, but the effect of shoes on the human foot and whether this impacts movement control and associated factors during walking gait is less clear.

A new study suggests that differences in foot morphology occur between those who walk barefoot and those who shod up. (Hollander, 2017) (D'A, 2009)

The highly sensitised plantar surface of the foot, particularly at the heel and metatarsal-phalangeal joints, is assumed to be driving the kinematic alterations described while changing from shod to barefoot running. In the long run, it is believed that the alteration will raise the chance of harm. (S, 1987)

In contrast to findings concerning shod populations, a lot of studies show that barefoot populations have a very low rate of running-related injuries. The adaptations that provide shock absorption, a necessary result of barefoot activity and a process that contributes to the existence of unshod populations' low injury frequency, are thought to be linked to flexion of the medial longitudinal arch of the foot during loading. The greater injury incidence in shod populations is also thought to be due to the recognised inability of the arch of the shod foot to deflect without failing (foot stiffness). To test these theories, researchers looked at the pattern of adaptation of the medial longitudinal arch of the foot as a result of increased barefoot weight-bearing exercise in 17 recreational runners. Deflection of the medial longitudinal arch under loading was enabled by changes in the medial longitudinal arch, proving the

assumptions. Other evidence shows that sensory input, particularly from the squamous epithelium of the foot, was a component of barefoot exercise that caused these alterations. The increased incidence of running-related injuries appears to be attributable to the sensory insulation seen in today's running shoes. "Pseudo-neuropathic" injuries are what they're called. (S, 1987)

The human foot has an extremely sophisticated anatomy that allows it to perform a wide range of activities. It acts as a base of support for us when we are standing. The foot must be stable at foot-strike and push-off during gait. During mid-support, however, the foot must transform into a mobile adaptor and attenuate loads. It also has spring-like properties, storing and releasing elastic energy with each footfall. The distortion of the arch, which is regulated by intrinsic and extrinsic foot muscles, achieves this. The foot arch design and musculature evolved in response to the increased demands of load carriage and running, according to evolutionary research. The stability of this arch, which we suggested as the foot's central "core," is required for appropriate foot function (The foot core system: a new paradigm for, 2015)

THE IMPORTANCE OF CORE STABILITY TO FOOT HEALTH:

In both the clinical and athletic worlds, core stability has gotten a lot of attention. Local stabilisers like the multifidus and transverse abdominis, as well as global movers like the latissimus dorsi, form up the muscle system of the lumbopelvic hip complex, or core. Local stabilisers and global movers of the foot work together to regulate the arch. The four layers of plantar intrinsic muscles that originate and insert on the foot, analogous to the lumbopelvic core, are known as local stabilisers. Global movers are prime movers in the arch, with bigger cross-sectional areas, larger moment arms, and larger cross-sectional regions. When they aren't working properly, the base becomes unstable and misaligned, causing aberrant foot movement. One of the most frequent overuse ailments of the foot is plantar fasciitis.

2.METHODOLOGY:

Type of study: A SURVEY STUDY

Sampling: Simple random sampling

Area of project: Urban and rural area (students and not students)

Sampling method:

- -No. Of Sample = 513
- Sample place = Google form survey

Inclusion criteria:

- Age 8 - 18
- All participants are allowed healthy individual.
- Who being mostly barefoot/habitual barefoot.

Exclusion criteria

- Any neurological and congenital exclude
- Any injury in past 6 month.

INTRUMENTATION

- BAREFOOT QUESTIONNAIRE SURVEY

3.PROCEDURE:

Teachers were given questionnaires to fill out to ask students about their on-the-ground experiences. A teacher was given the questionnaires both in person and via Google Forms. This was done to ensure that the sample collected represented the observations made on the grounds and that as many persons as possible were recruited.

CONSENT FORM

- This form contained information on the study's goal and expected Out comes, as consent form that allowed people to participate anonymously. Because the study was voluntary, the subjects were guaranteed that their information would be kept private and that they would not be reimbursed or given credit for their participation.
- Following the completion of the consent form, demographic data such as name, age, gender, height, occupation, and ethnicity were gathered.
- All participants were invited to complete the BAREFOOT QUESTIONNAIRE VIA GOOGLE FORM questioner.
- Data was recorded in Google Forms excel files.
- Data was analysed with SPSS 2.

4.RESULT ANALYSIS

Data Analysis was done under SPSS Social science packaging software 26.0 version. The proportion of persons categorised as regularly barefoot from valid survey responses was used to assess the prevalence of barefoot activities. Prevalence estimates were also derived for the overall study population for barefoot environments, athletics participation, and occurrence of leg discomfort. An independence T-test were used for reading. the graphical presentation is done using MS EXCEL.

5.RESULT

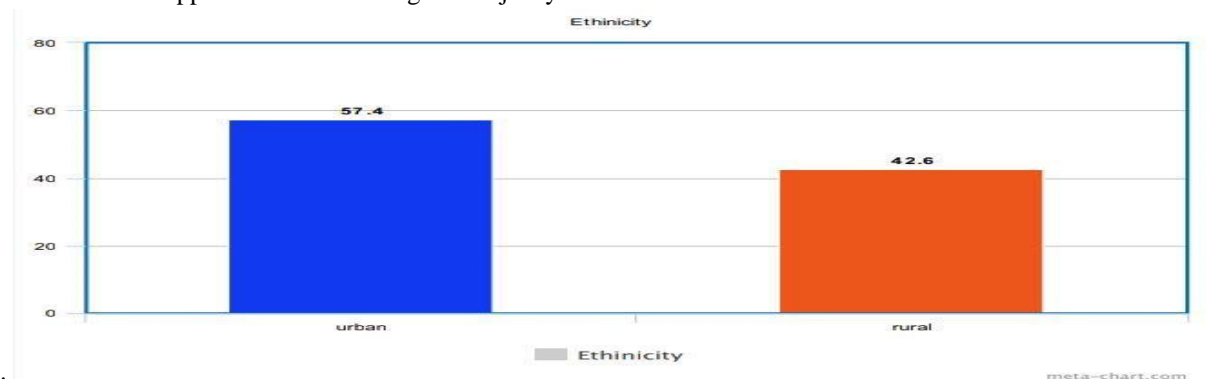
According to the survey data (183 n) responded among adolescents which shown in Table 2 which subdivided by area of ethnicity and categories by occupation (Table 3) as student and non-student. In which result is unexpected, most youngster and adolescens found comforts in being barefoot at alone (1.36 ± 0.650) Table 8 and flat slippers which they wear mostly wear. which also subcategories in HOME, SCHOOL AND SPORTS LEVEL. as its shows result Table 8 mostly being barefoot At HOME (1.49 ± 0.679), At SCHOOL (0.96 ± 0.908) and AT SPORTS (1.09 ± 0.850). In this also we given a questionnaire about what footwear you wear mostly; some say they like to be in barefoot mostly as they believe the most comfort being in it and no restriction occurs. according to survey they are like this we categories in barefoot, flat slipper and shoes AT TABLE NO 7.

The survey was completed by 183 students, The locations where students competed in their most recent activities, as well as a poll asking what kind of footwear, they wore throughout the sporting activity. 44 percent BAREFOOT shoes, 38.1 percent go shoes, and 17.9 percent wear flat slippers, according to the study.

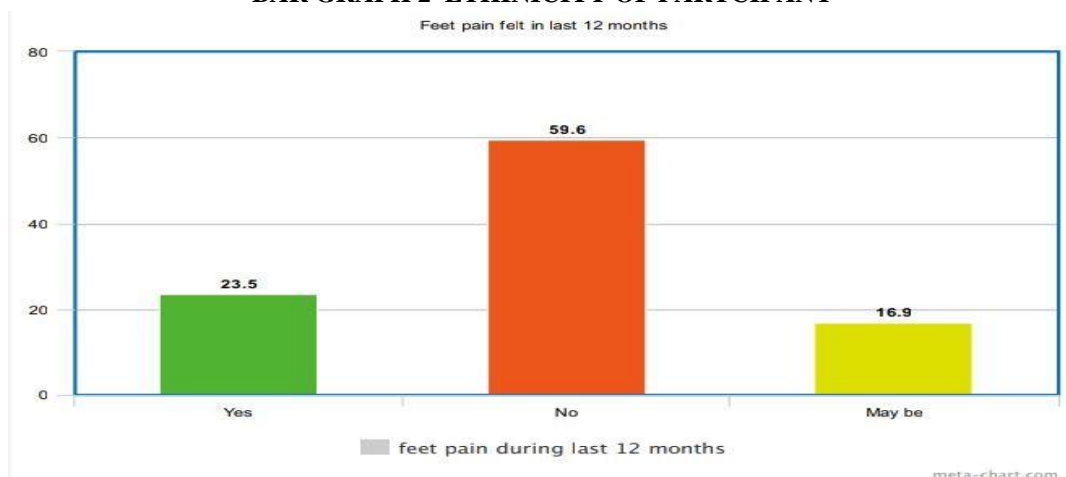


BAR GRAPH NO.1 NO.OF PARTICIPANT % DISCOMFORT WHILE WALKING

In this data analysis demonstrated in the table below, the result is rejected null hypothesis as its prevalence of being barefoot is high in majority in Indian populations and shows that most wearing footwear is flat slipper out of result which shows we have to look at also about flat slipper research as its high in majority.



BAR GRAPH 2 ETHNICITY OF PARTICIPANT



BAR GRAPH 3 FEET PAIN DURING LAST 12 MONTHS

LIST OF TABLES**TABLE NO 1: DEMOGRAPHIC DESCRIPTIVE STATISTICS**

	Age	Weight	Height
Mean	15.25	29.92	3.42
N	510	510	510
Std. Deviation	2.579	12.615	1.002

TABLE NO 2: FREQUENCY OF URBAN AND RURAL AREA TARGET

ETHNICITY					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	rural	217	42.6	42.6	42.6
	urban	292	57.4	57.4	100.0
	Total	510	100.0	100.0	

TABLE NO 3 : NO. OF FREQUENCY OF STUDENT AND NON-STUDENT

What's your occupation?					
		Frequency	Percent	Valid Percent	Cumulative Percent
	Non school	64	13	13	13.1
	Student	446	86.9	86.9	100.0
	Total	183	100.0	100.0	

TABLE NO 4: PERCENTAGE OF FEET PAIN IN 12 MONTH

DO YOU HAVE A FEET PAIN DURING 12 MONTHS?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Maybe	80	16.9	16.9	16.9
	No	310	59.6	59.6	78.7
	Yes	120	23.5	23.5	100.0
	Total	510	100.0	100.0	

TABLE NO 5: BODY FORM (%)

What's your body form?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ectomorph	153	30.1	30.1	30.1
	Endomorph	90	17.5	17.5	47.5
	Mesomorph	447	52.5	52.5	100.0
	Total	510	100.0	100.0	

TABLE NO 6: FREQUENCY OF VALID % OF DISCOMFORT WHILE WALKING

DO YOU FEEL ANY DISCOMFORT WHILE WALKING?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	17	3.3	3.3	3.3

No absolutely no	255	50.8	50.8	54.1
Sometimes yes	178	35.5	35.5	89.6
Yes	60	10.4	10.4	100.0
Total	510	100.0	100.0	

TABLE NO 7: VALID % OF HIGHEST WEARING FOOTWEAR

WHICH FOOTWEAR YOU WEAR MOSTLY?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Barefoot	165	32.2	32.2	32.2
	Flat slipper	265	51.9	51.9	84.2
	Shoes	78	15.3	15.3	99.5
	spike shoes	2	.5	.5	100.0
	Total	510	100.0	100.0	

TABLE NO 8: BAREFOOT QUESTIONAIR (SAMPLE T- TEST)

	MEAN	T TEST	P VALUE
INDICATE THE YOUR MOSTLY TIME SPENT BEING IN BAREFOOT?	1.36±0.650	28.113	P<0.05
INDICATE YOUR TIME AT SCHOOL IN BAREFOOT?	0.96±0.908	14.160	P<0.05
INDICATE HOW MUCH YOU SPENT BEING BAREFOOT IN HOME?	1.49±0.679	29.685	P<0.05
INDICATE HOW MUCH YOU SPENT BEING BAREFOOT IN SPORTS ACTIVITY?	1.09±0.850	17.270	P<0.05

6.DISCUSSION:

According to research and data, it proves that the purpose of this study is to determine the prevalence of barefoot in homes and daily life activities.

Mostly after a questionnaire, every five out of six people want to be barefoot most of the time and the majority are urban ethnicity (57.4%). During the questionnaire, the majority of urban people felt comfortable in flat slippers and barefoot, as they said it was more about comfort. They looked at home mostly. The Barefoot Questionnaire has 3 points in which its categories are in 3 parts: Most of the time, half of the time and none of the time. And points are like most of the time, (2 points), half (1 point) and none (0 points). This was evaluated and investigated. It comes out

1.360.650 alone barefoot most of the time, at school (0.960.908) and at home (1.490.679) and sports (1.090.850). According to the survey data, (183 n) responded among adolescents, which is shown in Table 2, which is subdivided by area of ethnicity and categories by occupation (Table 3) as students and non-students. In which result was unexpected, most young people and adolescents found comfort in being barefoot alone (1.360.650) Table 8, and flat slippers, which they wear mostly.

In the questionnaire we also asked about discomfort. Do you have discomfort during walking? NO 50.8% and Yes 10.4%. During this survey, we also asked if they had foot pain during the last 12 months, to which they responded, YES 23.5% AND NO 59.6%. According to this report, 45.3 percent of boys go barefoot on a regular basis. Our New Zealand sample has a prevalence of regular barefoot activity that falls between virtually totally barefoot South Africa and completely shod Germany. The data from Germany and South Africa originates from school-aged children and teenagers (primary and secondary school). (Hollander, 2017) .

Variables in footwear patterns between German and South African youngsters are likely due to cultural and environmental differences. However, South Africa's inferior world position in terms of economic resources (93rd vs. 19th) would lead to most South African children going barefoot on a regular basis. (J., 2017)

New scientific research has discovered an unexpected positive and underappreciated environmental component that has a favourable impact on health: direct physical touch with the massive quantity of electrons on the Earth's surface. The contemporary way of life isolates humanity from such touch. According to the findings, this gap may be a key factor to physiological malfunction and illness. It has been discovered that reconnecting with the Earth's electrons promotes fascinating physiological changes as well as subjective feelings of well-being. Earthing (or grounding) refers to the finding of advantages, such as improved sleep and pain relief, by going barefoot outside or sitting, working, or sleeping indoors while linked to conductivity. It's been discovered that reconnecting with the Earth's electrons causes interesting physiological changes and subjective feelings of well-being. The finding of advantages from walking barefoot outside or sitting, working, or sleeping inside connected to conductive systems that transmit the Earth's electrons from the ground into the body is known as earthing (or grounding). Reductions in overall stress levels and tension, as well as a shift in ANS balance, are revealed by physiological and electrophysiological effects. In a randomised double-blind pilot research exploring the effects of earthing on human physiology, 58 healthy adult volunteers (including 30 controls) took part.

7.CONCLUSION

Purpose of this research was to check the prevalence rate of barefoot among adolescents, which has its own ethnicity in which urban response 57.4% and rural 42.6% result of this survey demonstrate that overall major population spent time barefoot at alone 28.113(t test). And home 29.685(t test). Which ensure majority comfortable being barefoot in most cases in India.

The purpose of this study was to investigate how frequent barefooting is among teenagers of various ethnic backgrounds. According to the results of this poll, 28.113 percent of the population went barefoot at least once a day (t test). At home, it's 29.685. (t test). In most cases, this means that the majority of Indians are comfortable walking around barefoot. Even though the methodology of this study was targeted to the target demographic, future research should seek to add to the worldwide data on teenage footwear habits, at least in relation to a) everyday life, b) school life, and c) sports. Longitudinal research on the impact of footwear on foot morphology and musculoskeletal health is required.

Around 86 percent of students and 14 percent of non-students in India's secondary schools and non-schoolers walk barefoot at home during physical education and sports at least half of the time, according to the findings of this poll. These findings might indicate a cultural divide between India and other highly industrialised nations.

8.Future scope of study

Future scope can be on physical assessment as due to covid /pandemic we have to do on google form, but it can more interest if we go in person to perform individual test /questionnaire. Also new evidence can be flat slippers as it has less amount of research on evidence based so we further research on this as its important to know why major population comfort in most of the time flat slipper as its has shown 51.9% in this research.

9.Conflict of interest: -

The physical exam, which we must do on Google forms due to the covid/pandemic, may be a conflict of interest, but it could be more fascinating if we go in person to conduct individual tests/questionnaires. Furthermore, because there has been less study on evidence-based flat slippers, we will do additional research on this because it is critical to understand why the majority of the population chooses flat slippers, which has been shown to be 51.9 percent in these studies. In addition, for future research, we need recruit a larger number of adults to participate in the experiment.

10.Acknowledgement

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