

Transportation Difficulties Faced by Female Students of Karachi Medical and Dental College (KMDC) and University of Karachi (UoK)

Afreen Humayun¹, Hira Saleem², Rimsha Raza³, Sina Aziz⁴

Abstract

Objective: To determine the frequency of different modes of transportation used by female students of KMDC and UoK, and to study the difficulties faced by them while commuting to their universities and the subsequent effect on their studies.

Methods: An institutional and questionnaire-based study was conducted among the female students of KMDC and UoK aged 17-25 years from May to December 2016. The study was approved by the Ethical Review Board of Karachi Medical and Dental College. A total of 600 students were included in the study by probability (simple, random) sampling method. Students responded to a series of questions regarding mode, convenience and difficulties related to transportation and the impact transportation difficulties had on their education. The data was analysed by using SPSS Version 20.0. Written consent was obtained from the students prior to filling the questionnaire.

Results: Out of 600 students, 50.8% used transport provided by the university/college, 53.8% did not consider any means of transportation safe, 54.5% students reported that their studies were affected due to indirect factors such as stress, trauma, fatigue, pollutants, congestion and the consequences were fewer study hours and delayed arrival in class. The frequency of physical along with verbal harassment faced by the students while commuting was reported as 31.3%.

Conclusion: Majority of participants complained that their studies were affected by stressful travelling and other transport issues but those travelling by the transport provided by the institute had fewer problems. Efforts should be made to overcome these problems affecting female education.

Keywords: Education, transportation, social behaviour, academic medical centres, travel.

IRB: Approved by Ethical and Scientific Review Board, Karachi Medical and Dental College.

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Introduction

Education is the backbone of any country's development; it is globally recognised as an essential step towards achieving socio-economic, scientific and technological advances and the female population's education is a fundamental factor affecting a country's progress. According to the World Bank Open Data, in 2010, Pakistan's youth literacy rate (population aged 15-24 years) was

¹⁻³ MBBS Students, Karachi Medical and Dental College

⁴ Department of Paediatrics and PICU, Unit II Abbasi Shaheed Hospital, Karachi Medical and Dental College

Correspondence: Afreen Humayun
Final Year MBBS Student
Karachi Medical and Dental College
Email: afreenhumayun@hotmail.com
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71%, and 62% of the female youth population was literate^{1,2}. Over the past few years, women have started realising their capabilities and personal rights, and this realisation has led to an increasing participation in developing the economy of Pakistan³.

Recently, due to a worldwide increase in economic growth, female literacy rate and its contribution to the economy of Pakistan have increased, but at the same time, the preservation of female rights and safety need to be considered⁴. In Pakistan, every year, a large number of female students are getting admitted into the best medical and non-medical universities suggesting the capabilities of women of Pakistan. In University of Karachi (UoK),

73% of the current student population is female; in the year 2006, 60% of female students were enrolled in the institution, and since then this percentage has increased two-folds every year⁵. In the same way, medical universities in Sindh and Punjab have also registered increasing female admissions. Dow University of Health Sciences (DUHS), located in Karachi, currently has a ratio of 70% and 30% of female to male ratio⁶. This increase in a number of students, especially females, requires safe and comfortable modes of transportation, but due to lack of interventions by local government, the issue has resulted in difficulties faced by students while travelling to their universities or educational institutions⁷.

Transportation problems are being faced in all the cities of Pakistan, but the rapid increase in the population of Karachi over the past years has led to a massive demand for safe means of transportation. Living conditions for the city of an estimated 17.6 million people⁸ in Karachi depend heavily on a healthy transportation system, among other basic necessities. Main modes of public transportation in Karachi include buses, rickshaws⁹, university shuttles and private transport (including cars and motorcycles).

In Pakistan, females are subjected to many gender-based inequalities. The gender discrimination faced by girls and the outdated cultural values restricting their education are the main obstacles standing in the way¹⁰. Inequality of access to resources between men and women is most common in the poor areas and because of this gender inequality, most of the females require transport facilities that are easily approachable, safe, secure and, most importantly, should protect their integrity and solitude¹¹.

The female students face numerous problems during travelling due to the mismanagement of transport system in Karachi. The current transport system is unable to fulfil the needs of students as a whole. It is dangerous, untrustworthy, suffocating, and crowded. Students have to endure psychological, social and health-related problems during trav-

elling daily such as traffic jams, long delays, high incidence of road accidents, verbal, physical and emotional abuse, stress and fatigue. These transportation problems have posed serious threats to the education sector and, at times, it makes it very difficult for women to compete with men¹².

Over the past few years transport planners and policy makers all around the globe have identified the variation in travelling pattern of male and female as a fundamental and persisting component of transportation system¹³. At present, very few of researchers have identified the effect of gender-based variation in travelling patterns on female education and relatively few of these observations have contributed to actual policy making, hence, new strategies for better transportation system are required in facilitating female education.

The present multicentre study was conducted to highlight the transport issues faced by the female students of Karachi Medical and Dental College (KMDC) and UoK. In this study, we have determined the frequency of different modes of transportation used by female students in Karachi, difficulties associated with those modes and their impact on education. The eventual outcome of this study is to provide a paradigm to policy makers to introduce interventions and overcome the difficulties that are affecting female education.

Subjects and Methods

This was a cross-sectional questionnaire-based study conducted among the female students of KMDC and UoK. The approval was taken from Ethical Review Board of Karachi Medical and Dental College. Duration of the study was from May to December 2016. Probability (simple, random) sampling technique was used, where 600 female students participated in the age range of 17-25 years, as most of the students start their university at the age of 17 and graduate at the age of 25 years. The sample size of 358 students was selected but, it was extended to 600 students ($n = 600$), as more students were willing to participate, therefore we continued sampling even after the

number 358 was reached, among which 359 and 241 subjects belong to KMDC (medical and dental students) and UoK, respectively.

The sample size was calculated by using the following formula¹⁴:

$$\text{Sample size (N)} = Z_{1-\alpha/2}^2 p(1-p)/d^2$$

Where p is prevalence of reference study=37%¹⁵

d is an absolute error or precision=5%

Confidence Interval: 95%

$Z_{1-\alpha/2}$ is standard normal variate=1.96

Our inclusion criteria were female students who were regular and of the morning shift, and those students were excluded who did not participate or were absent at the time of the survey. The age range of 17-25 years in our study was divided into the following categories: 17-19 years, 20-22 years and 23-25 years. A written consent from each respondent was taken and they were ensured the confidentiality and anonymity in the consent form.

A self-made questionnaire was carefully designed after conducting a pilot study including demographic data of subjects such as age and residential area. Twenty questions with suitable options were included to assess the difficulties the students had to face i.e. mode of transport, frequency of using transport, stress faced while getting on/off the transport, usual time of journey in the morning, total time taken to reach the university (<30 min, 30 min, 60 min, > 60min), cleanliness, safety issues, availability of seat, trauma/injuries, physical along with verbal abuse, fatigue, congestion, noise and air pollution faced during travelling, impact of travelling on studies, study hours and also delayed arrival in class, experience of snatching bags or accidents during travelling.

Statistical analysis was done on SPSS version 20.0. All categorical variables were calculated in terms of frequency count ('n' and %) and cross tabulation was performed to determine chi-square values and after determining chi-square values with their respective degree of freedom, p-value by chi-square calculator¹⁵ was calculated to assess the significant difference between the variables (mode of

transport, time taken to reach the university, safety issues, trauma/injury, stress/fatigue, overcrowded transport issues, study hours issues and late arrival in classes due to transport problems) of both institutes, considering p-value ≤ 0.05 as significant.

Definitions of the terminologies used in this study included: opportunistic harassment, considered as physical and verbal abuse being faced by female students during travelling. While physical abuse was defined as an act of coming in contact with another person with the intention to cause hurt, pain, injury, or other physical suffering or bodily harm. Whereas, verbal abuse was a form of emotionally abusive behaviour involving the use of language, name-calling, disrespect, devaluing statement and criticism. Regular students were defined as those who came to the college or university at least five times in a week.

Results

There were 600 participants out of which 359 (59.8%) students were of KMDC and 241 (40.2%) were of UoK. Out of 600 students, 50.8% used transport provided by the university/college, 16.7% used public transport, 17.3% used private transport and 15.2% used both private and public transport. 32% of the students travelled for <30 minutes to reach university/college, 19.2% travelled for 30 minutes, 25.3% travelled for 60 minutes and 23.5% students travelled for >60 minutes. About 53.8% students did not consider any means of transportation safe these days, 10.7% of the students got hurt/injured, whereas 48.3% students got stressed or fatigued while travelling. A total of 31.3% of the students faced verbal and physical abuse and 60.2% of the students felt congested due to an overcrowded transport vehicle. A total of 54.5% of the students reported that their study got disturbed due to travelling (Table1).

Table 1 also shows that 69.3% of the students reported that stressful travelling affected their study hours and 37.2% of the students got late for their class. Table 2 shows the comparison of significant value (p-value) between the variables (mode of transport, time taken to reach the university, safety issues, trauma/injury, stress/fatigue, overcrowded transport issues, study and study hour issues and late arrival in classes due to transport problems) of

KMDC and UoK. The variables having a p-value<0.05 were the mode of transport, any sort of trauma/injury during travelling, facing verbal and physical abuse while travelling and late arrival in class (Table 2). Fig.1 and Fig. 2 show the frequency of factors related directly and indirectly affecting female education respectively.

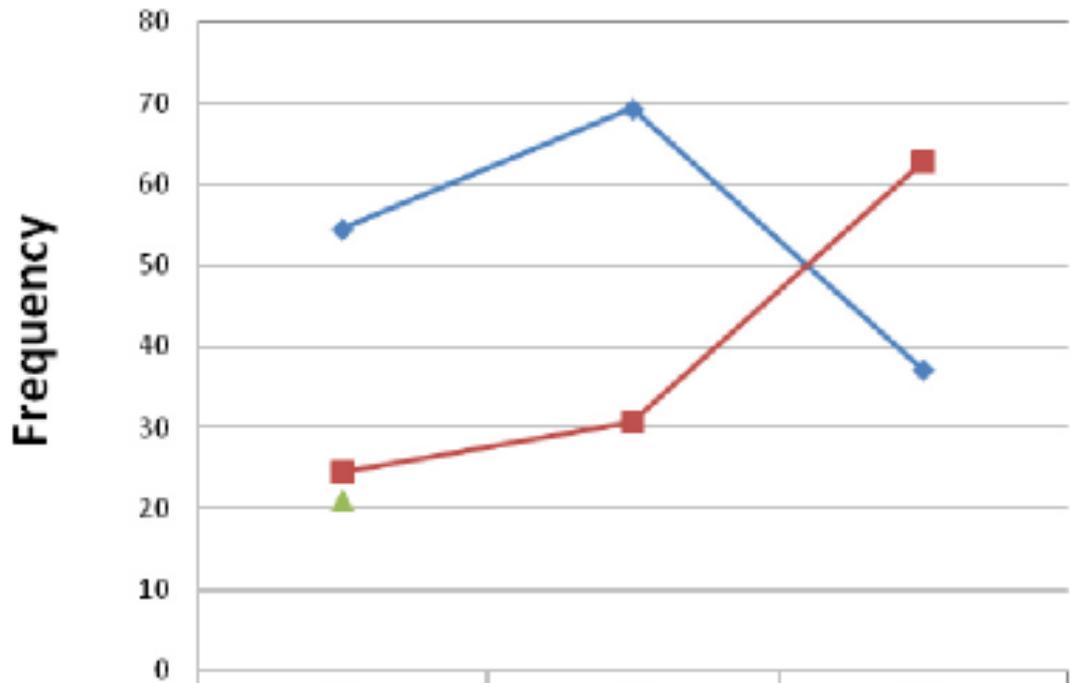
Table 1. Frequency of the variables affecting the female education

Variables	Frequency	'n' (%)
Mode of transport.		
a) University point/shuttle.	305	(50.8)
b) Public transport.	100	(16.7)
c) Private transport.	104	(17.3)
d) Private and public both.	91	(15.2)
Total time taken to reach the university.		
a) <30 min	192	(32)
b) 30 min	115	(19.2)
c) 60 min	152	(25.3)
d) >60 min	141	(23.5)
Travelling by any sort of transport is safe enough nowadays.		
a) Yes	98	(16.3)
b) No	323	(53.8)
c) Sometimes	179	(29.8)
Any sort of trauma/injury during travelling		
a) Yes	64	(10.7)
b) No	442	(73.7)
c) Sometimes	94	(15.7)
Stress and fatigue while travelling.		
a) Yes	290	(48.3)
b) No	130	(21.7)
c) Sometimes	180	(30)
Ever faced any physical or verbal abuse during travelling.		
a) Yes	188	(31.3)
b) No	412	(68.7)
Problems of congestion due to overcrowded transport.		
a) Yes	361	(60.2)
b) No	103	(17.2)
c) Sometimes	136	(22.7)
Study disturbed due to travelling.		
a) Yes	327	(54.5)
b) No	147	(24.5)
c) Sometimes	126	(21)
Stressful travelling affects study hours.		
a) Yes	416	(69.3)
b) No	184	(30.7)
Late arrival in the class.		
a) Yes	223	(37.2)
b) No	376	(62.7)

Table 2. Comparison of significant value (p-value) between variables of Karachi Medical and Dental College and University of Karachi

Variables	KMDC Frequency 'n'	University of Karachi Frequency 'n'	Significant value (p-value)
Mode of transport.			
a) University point/shuttle		256	49
< 0.00001*			
b) Public transport.		28	72
c) Private transport.		29	75
d) Private and public both.		46	45
Total time taken to reach the university.			
a) <30 min	121	71	0.34
b) 30 min	65	50	
c) 60 min	84	68	
d) >60 min	89	52	
Travelling by any sort of transport is safe enough nowadays.			
a) Yes	61	37	0.6
b) No	196	127	
c) Sometimes	102	77	
Any sort of trauma/injury during travelling.			
a) Yes	22	42	< 0.00001*
b) No	287	155	
c) Sometimes	50	44	
Stress and fatigue while travelling.			
a) Yes	179	111	0.37
b) No	80	50	
c) Sometimes	100	80	
Ever faced any physical or verbal abuse during travelling.			
a) Yes	90	98	0.000054*
b) No	269	143	
Problems of congestion due to overcrowded transport.			
a) Yes	222	139	0.1
b) No	52	51	
c) Sometimes	85	51	
Study disturbed due to travelling.			
a) Yes	209	118	0.07
b) No	82	65	
c) Sometimes	68	58	
Stressful travelling effects study hours.			
a) Yes	257	159	0.14
b) No	102	82	
Late arrival in the class.			
a) Yes	75	148	< 0.00001*
b) No	283	93	

*p-value <0.05 shows that there is a significant difference between the variables of KMDC and University of Karachi as mentioned above.



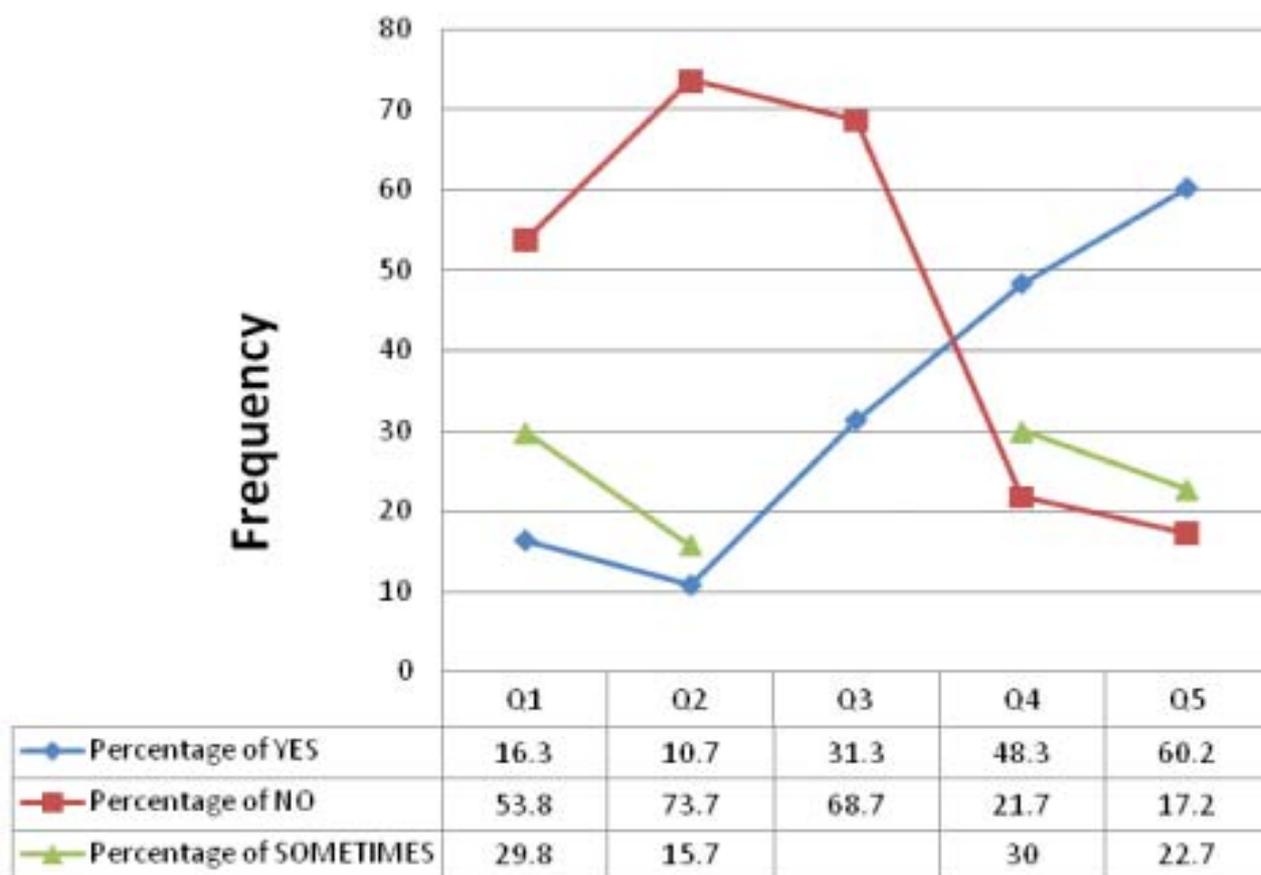
	Q1	Q2	Q3
Percentage of YES	54.5	69.3	37.2
Percentage of NO	24.5	30.7	62.7
Percentage of SOMETIMES	21		

Q1. Do you think your study gets disturbed due to travel to the university and back to home?

Q2. After travelling back to home from university do you get enough time to study?

Q3. Do you frequently get late for the class because of your transport?

Fig 1. Frequencies of the factors directly affecting the female education



Q1. Do you think that travelling by any sort of transport is safe nowadays?

Q2. Have you ever experienced any sort of trauma/injury while travelling?

Q3. Have you ever faced any physical/verbal abuse during travelling?

Q4. Do you feel fatigue/stress/irritated during travelling?

Q5. Does your transport get overcrowded frequently and you feel uncomfortable and congested in it?

Fig 2. Frequencies of the factors indirectly affecting the female education

Discussion

Higher education plays a great role in establishing capital as well as growth and steadiness of social and economic aspects of a country¹⁶. Educated females play a significant role in the growth of a country¹⁷. This study was based on the issues faced by females due to transport problems as gender-based inequalities are the main obstacle for women in achieving education which is why we excluded males in this study as they can generally overcome difficulties regarding transport^{10,18}. Many factors hinder female education, one of which is unsafe transport¹⁹. Therefore, the focal point of this research remains the influence of transportation problems on female education. We also determined the difficulties faced by female students of KMDC and UoK specifically.

A study conducted by Abolfotouh MA et al. among the students living in Alexandria University Hostels, showed that 48% of the students complained that their studies were disturbed due to time wasted because of transportation problems¹⁹ which is similar to the outcome of our study which showed that more than half (69.3%) of the students reported that their studies were disturbed due to travelling back and forth from the university every day. In the current study, numerous factors affecting the female education directly or indirectly were considered. According to the World Bank report of 2011, 40% of the women of Casablanca had to walk for more than 10 minutes to reach the bus stop while 53% said that the buses were accessible after every 15 minutes²⁰. Similarly in the current study, 73.3% of the students had to walk for some distance in the morning to reach the bus stop, while 75.5% of the students had to wait at the bus stop for their transport. A study done by Queirós M et al. in Portugal showed that 53.5% of the trips made by women between home, work and study do not exceed 15 minutes²¹, whereas in the current study minimum time taken by the students to reach their university/college was less than 30 minutes among 32% of the students and 23.5% of the students travel for more than 60 minutes. Similarly, in our study more than half of the students reported that they do not get enough time to study after taking a long time travelling back home from the university.

The study done in Dhaka by Shefali KM, showed that female students used school or college provided transport more than male students (2.4% of females and 1.6% of males) as compared to public buses (1% of females and 3.1% of males)¹¹, which is similar to the results in our study in which majority of female students used university provided transport (50.8%) whereas only 16.8% used public transport. Those using private transport had fewer difficulties compared to those using public transport; this is supported by a previously published study²² on females using private transport. Numerous issues are being faced by female students during travelling which indirectly affects their studies; one of them is safety. Safety issues were observed in previous studies too. A study done among the female students of university and colleges of the following four districts of the Punjab i.e. Lahore, Okara, Multan and Rawalpindi showed that females do not get higher education because they do not feel safe while going to institutions alone²³. Similarly, in the present study, 53.8% of students did not think that travelling by any sort of transport is safe enough nowadays.

Overcrowding is also a very common issue faced by females because of small female compartments in public transport which leads to congestion. A study was done by Peters D et al.¹³ which addresses the gender-based transport issues in less developed countries, showing that 41% of the women feel overcrowded during travelling¹³, which is incomparable to our results in which 60.2% of the female students felt overcrowded and congested during travelling. Overcrowding and lack of space in public buses results in opportunistic sexual harassment⁹. A study done by Abolfotouh MA et al.²² in Sukkur showed that 24% of the women faced sexual harassment during travelling²². A previous published study showed that 79.6% of working women demanded safe transportation because the verbal and physical harassment and personal vulnerability while travelling, which in turn, reduced the number of females utilising public transport (4.4%)¹². Another study showed that 48% of the women faced physical and verbal harassment, 28% have faced mobile-snatching/theft while 57% have experienced road accidents while walking to or using public transport²⁰. Similarly, in our study 22.6% of the students using university point/shuttle faced verbal and physical harassment which is less as

compared to public transport in which verbal and physical harassment was being faced by 55% of the students travelling through public transport, 40.84% of students availing public transport have faced mobile-snatching during travelling while 10.7% of the students have faced injury/trauma during travelling. Students also had to face stress, noise and air pollution. These factors could not be compared to locally published data, as it was not available related to these parameters and the study appears to be the first of its kind from this region.

Various studies related to the socio-cultural and economic factors that have led to hindrance in female education have been done such as study conducted in Asia-Pacific region in which gender issues were addressed in those individuals receiving higher education²⁴, a study in Bahawalpur, Pakistan was done to study numerous problems encountered by women in education sector of which the main problems were social and family pressure¹⁵, another study was done in Gilgit-Baltistan on women empowerment through higher education¹⁷. While a study targeting the women in sub-village Amandara Malakand Division Khyber-Pakhtunkhwa in which it was observed that there were physical and infrastructural obstacles to women's education²⁵. However, the present study focuses and only covers transportation problems hindering female education.

There are a few limitations to this study. Firstly, it is a cross-sectional study hence, we could not follow-up with the participants to learn if their problems were resolved afterwards. Secondly, the data is collected only from two educational institutes so the result is not applicable to the province or the city as a whole.

It is recommended that government and policymakers must take steps to address the issues faced by female students in terms of transportation. The number of transport vehicles should also be increased to facilitate the students which will, in turn, reduce the time spent in waiting for the transport hence shortening the total travelling time and increasing the study hours. Women-friendly modes must be introduced and made feasible for every student. Steps must also be taken to overcome the problem of physical and verbal harassment faced by students during travelling. Measures should be taken to improve the quality of transport, women-friendly transportation must be introduced so that

higher education can be assessed easily by everyone irrespective of the gender.

Conclusion

From the current study, it can be concluded that females face difficulties during travelling for their places of education and therefore transportation difficulties pose a great challenge, especially to the educational sector. Bad transportation not only affects the process of education but also has adverse effects on the health, particularly psychological health. It is time for the government and policy makers to come forward and address this issue and take measures for safe and reliable transportation.

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Conflict of Interest

Authors have no conflict of interest and no grant/ funding from any organisation for this study

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