

USAGE OF KINESIOLOGY TAPE IN THE MANAGEMENT OF PATELLOFEMORAL PAIN SYNDROME: A SURVEY AMONG PHYSIOTHERAPIST IN KARACHI

¹FAIZAN SIDDIQUI, ¹AFTAB AHMED MIRZA BAIG, ¹RABAIL RANI SOOMRO, ¹FARHAN ISHAQUE AND ²ABID KAMAL

¹Institute of Physical Medicine & Rehabilitation, Dow University of Health Sciences

²College of Physiotherapy, JPMC

Corresponding Author email : farhanishaque.ipmrojha@gmail.com

خلاصہ

پس منظر: گھٹنے کا درد عام طور پر گھٹنے کے اگلے حصے میں ہوتا ہے۔ بروقت علاج کے لئے زرد اثر علاج ضروری ہوتا ہے۔ بہر حال تحقیقی نتائج سے یہ بات واضح ہوتی ہے کہ حرکاتی پٹی کا استعمال زرد اثر ہوتا ہے۔ مگر اسکا اطلاق عام طور پر پاکستان میں نہیں کیا جاتا ہے۔

مقصد: کراچی میں حرکاتی پٹی کے استعمال کا جائزہ لینا ہے۔

طریقہ تحقیق: کراچی کے مختلف اداروں میں ایک ابتدائی جائزہ لیا گیا اسکے لئے غیر اندیشی طریقہ استعمال کیا گیا۔ آبادیاتی شماریات کو جمع کرنے کے لئے خود ساختہ سوال نامہ بنایا گیا ہے۔ تمام عوامل کا جائزہ اوسط تعداد کے ذریعے کیا گیا ہے۔ تمام عوامل اور حرکاتی پٹی کے مابین سلسلے کو کائی اسکوائر کے ذریعے جانچا گیا ہے۔

نتائج: نتائج ظاہر کرتے ہیں کہ 43.75% شراکت دار لوگ گھٹنے کے درد کے لئے حرکاتی پٹی استعمال کرتے ہیں۔ اور مزید یہ کہ 94.02% شراکت داروں نے یہ ظاہر کیا ہے کہ گھٹنے کے درد کے علاج کے لئے حرکاتی پٹی کا استعمال انتہائی مفید ہے۔

خلاصہ: اس تحقیق کے نتائج سے یہ بات ظاہر ہوتی ہے کہ اس پٹی کے زرد اثر ہونے کا علم سے گھٹنے کے درد میں کمی کا علاج ممکن ہے اور مزید یہ کہ حرکاتی پٹی کی عدم دستیابی اور استعمال میں مہارت کی کمی ایک بڑی رکاوٹ ہے۔

خصوصی الفاظ: حرکاتی پٹی، گھٹنے کا درد، طبی علاج۔

Abstract

Patellofemoral pain syndrome frequently occurs as an anterior knee pain in large population in Asia. Effective intervention is required to treat it timely however as shown in evidence kinesiology tape is effective treatment internationally but it's applicability in Pakistan is not known. The objective of the study was to evaluate the use of kinesiology tape in the management of patellofemoral pain syndrome in Karachi Pakistan. A cross sectional survey was conducted at multi centers of Karachi using non probability purposive sampling technique. To gather data on demographic variables self-administrated questionnaire was used. All categorical variables were presented through frequencies and percentages. Application of Chi-square test was taken into the account to catch out association between use of kinesiology tape in PFPS and other categorical variables. The results show that (43.75%) of the participants use kinesiology tape in the management of patellofemoral pain syndrome. And 66 out of 70 (94.2%) participants stated that it is effective in the management of patellofemoral pain syndrome. The result of this study suggests that though the knowledge of effectiveness of usage of k tape in patellofemoral pain syndrome is high among the physical therapists, its application is not very common due to lack of skills, its unavailability and the cost.

Key Words: Kinesiology Tape, Patellofemoral Pain Syndrome, Physical Therapist.

Introduction

Patellofemoral pain syndrome (PFPS) has been illustrated as a frequent diagnosis presented in outpatients department affecting most commonly young adults with representation of anterior knee pain (AKP) (Sathe *et al.*, 2002). The terms AKP and PFPS are often used synonymously to describe syndrome which outcome from patellar dislocation, patellar subluxation or, pain without trauma. (Callaghan and Selfe, 2007; Thomee *et al.*, 1999; Cutbill *et al.*, 1997).

Patellofemoral disorders are seen commonly in orthopedic clinics globally affecting all kind of population specifically athletes (30%), young athletes (26%) and young active adults (7%) (Ahmad *et al.*, 2000; Cosca and Navazio, 2007). Recent studies showed PFPS to be highly prevalent among Asian population. Incidence in India reported to be 21% to 40% and in Iran it is 7% to 15% (Eapen *et al.*, 2011; Minoonejad *et al.*, 2012). Another study also highlights that every 4th persons is suffering with this problem% (Eapen *et al.*, 2011). Similarly another study shows that PFPS incidence is greater among females (20%) than males (7.4%) the reason behind

it is the mechanical disadvantage in females because the force acting on the joint is by short moment arm of femur (Balci *et al.*, 2004).

At current, to diagnose AKP or PFPS there are no valid clinical test or investigations (Cook *et al.*, 2010; Cook *et al.*, 2012). PFPS condition can be rule out by history, as well as reporting the functional abilities as assessed by the Anterior Knee Pain Questionnaire (Brody and Thein, 1998). To minimize pain and edema, correction of biomechanical deficiencies, enhancement of strength and endurance, and regain of motion and function are the main objectives of rehabilitation program for PFPS (Brody and Thein, 1998; Philadelphia Panel, 2001).

Among the non-operative treatment approaches therapeutic modalities are most recommended approaches by American Physical Therapy Association's guide for physical therapist practice for the condition of PFPS (Angoules *et al.*, 2008; Manske and Davies, 2003; Wilk *et al.*, 1998). Among those recommended modalities most commonly used are cryotherapy, thermotherapy, ultrasound, iontophoresis and Phonophoresis, TENS & EMS.

Along with other traditional modalities, current literature suggests the use of patellar taping by McConnell as a significant treatment to anterior knee pain (McConnell, 1986). Taping as suggested in literature enhance the activity of VMO in accordance with VL, increase quadriceps energy, improve neuromuscular recruitment and ultimately reduce pain (Gilleard, 1998; Crossley, 2001; McConnell, 1996; Crossley *et al.*, 2002). McConnell Taping theory suggests that patellar position could be altered by the help of this technique which leads to improvement in contraction of the vastus medialis oblique (VMO) muscle (Callaghan *et al.*, 2002) and reduction in pain of PFPS (Aminaka and Gribble, 2008). This taping technique is traditionally used worldwide in the management of patellofemoral pain syndrome along with other physiotherapy treatment but there has not been any study done to see the awareness and usage of kinesiology tape to treat patellofemoral pain syndrome in Pakistan. The purpose of this study is to evaluate the physiotherapist awareness about kinesiology tape and its application among clinical settings of Karachi so that the best effective treatment should be implemented.

Materials and Methods

After the approval from the Institutional Review Board (IRB) of DUHS with reference number IRB-653/DUHS/approval/2015/117 this study was conducted on 160 physical therapists. The sample size was calculated through online WHO software open epi with anticipated frequency 11.74%, design effects 1% and class interval CI-95% (Cook *et al.*, 2012).

A cross-sectional survey design & non probability purposive sampling technique was used. Physical therapist of Institute of Physical Medicine & Rehabilitation, OJHA, Dow University of Health Sciences, Hill Park General Hospital, Liaquat National Hospital, Patel Hospital, Baqai Medical University and Ashfaq Memorial Hospital were included for this study. After taking the permission from head of respective departments, self designed questionnaires were distributed among qualified physical therapists. Informed consent was taken by each participant of the study.

Result

Data was entered and analyzed through SPSS Version 21. All categorical variables were presented through frequencies and percentages. From this study it was found that there were 70 (43.75%) physiotherapists who were using Kinesiology tape in PFPS while 90 (57.25) physiotherapist showed they do not use Kinesiology tape in patients with PFPS as shown in figure I.

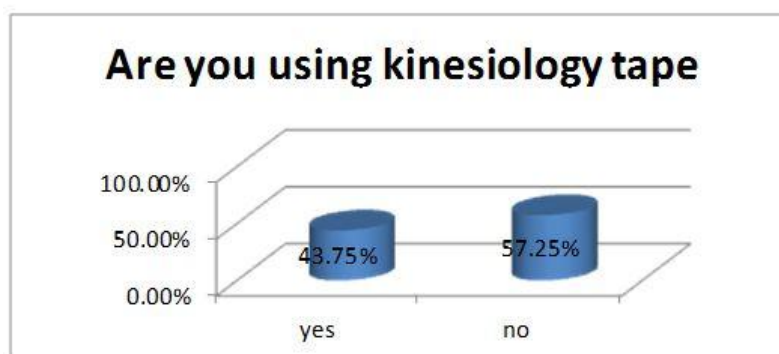


Fig.1. Shows Kinesiology tape usage.

Table-1 Summary of Data Collection

		Frequency	Percentage
1	Qualification of physiotherapist (n=160)		
	BSPT	34	21.25
	DPT	26	16.25
	PPDPT	16	10
	MSPT	84	52.5
2	Knowledge of kinesiology tape (n=160)		
	Yes	158	98.75
	No	2	1.25
3	Aware of kinesiology tape evidence in PFPS (n=160)		
	Yes	122	76.25
	No	38	23.75
4	Are you using kinesiology tape in PFPS (n=160)		
	Yes	70	43.75
	No	90	56.25
5	Reason why not apply kinesiology tape in PFPS (n=90)		
	Not trained in its application	58	64.44
	Not easily available in Karachi	18	20
	It is expensive	12	13.333
	Others	2	2.22
6	Observe any effectiveness of kinesiology tape of PFPS (n=70)		
	Yes	66	94.285
	No	4	5.714
7	What Outcome do you use to measure its effectiveness (n=70)		
	VAS	48	68.571
	WOMAC	10	14.285
	Others	12	17.142
8	Other therapy using with kinesiology tape (n=70)		
	Open kinetic chain exercise	16	22.857
	Closed kinetic chain exercise	34	48.571
	Others	18	25.714
	No other therapy	2	2.857
9	Which Kinesiology tape techniques (n=70)		
	I shape	6	8.571
	Y shape	40	57.142
	Donut shape	20	28.571
	Fan shape	4	5.714
10	% of stretch(n=70)		
	100%	4	5.714
	75%	22	31.428
	50%	24	34.285
	25%	20	28.571
	0%	0	0

Table I shows frequency and percentages of responses of different questions asked through the questionnaire. It is quite clear from table I that 98.75% of the participants had knowledge about the kinesiology. Around 76.25% of participants were well aware about the kinesiology tape in PFPS but only 43.75% (n=70) of physical therapists were using kinesiology tape in PFPS. Majority of the participants 64.44% (n=90) were not trained in taping technique. Around 20% participants believed that kinesio tape is not easily available in Karachi and very few numbers of the participants (13.33%) believed that it was expensive. P-value < 0.05 considered as significant.. Further questions were asked from the participants who were applying Kinesiology in PFPS (n=70), for example when such participants were asked about the effectiveness of Kinesiology tape, almost all participants (94.28%) replied positively. It was found that most of participants (68.57%) used VAS as an outcome measure, whereas, 14.285% used WOMAC and 17.14% participants used some others outcome

measures respectively. Nearly half of the participants (48.57%) mentioned that they also used closed kinetic chain exercise along with kinesiology tape, and there were almost 23% of the participants who used open kinetic chain exercise. When participants were asked about the kinesiology technique they used, more than half participant (57.14%) mentioned about Y shape technique, 28.57% participant mentioned about donut shape and very few reported about I and fan shaped techniques (8.57% and 5.714% participants respectively). Moreover, it was found that out of 70 participants there were only 4 that stretch 100% and who stretch 75%, 50% and 25% were 31.42%, 34.28% and 28.57% respectively.

A significant association (P -value < 0.001) between awareness of Kinesiology tape evidence and use of Kinesiology tape in PFPS was found out. Chi-square test was taken into account to find an association between the use of kinesiology tape in PFPS and other categorical variables, as evident in table 2.

Table 2: Association between awareness of Kinesiology tape evidence in PFPS and use of Kinesiology tape in PFPS (n=160)

		Are you using kinesiology tape in PFPS		Chi-square P-value
		yes	no	
Aware of kinesiology tape evidence in PFPS	Yes	70	52	$< 0.001^*$
	No	0	38	

* P -value < 0.05 considered as significant

It is quite clear from table 2 that there were 70 such participants who were aware with kinesiology tape evidence and they used it in PFPS. Table 2 also represents that there was significant associations (P -value < 0.001) between awareness of Kinesiology tape evidence and use of Kinesiology tape employing chi-square test.

Discussion

The aim of this study was to evaluate usage of kinesiology tape in the management of patellofemoral pain syndrome (PFPS) and assessing the kinesiology tape in the physiotherapist Karachi Pakistan. The results showed that among 160 qualified physiotherapists, less than half of the participants (43.75%) use kinesiology tape in the management of PFPS. In this study, majority of the participants confirmed that they are aware about kinesiology tape. In addition, the most of the participants expressed that they are aware about evidence which support the kinesiology tape effectiveness in PFPS. This finding is parallel with studies conducted by Campolo *et al.*, 2013 which supports the use of kinesiology tape in PFPS. In their study kinesiology tape in patients diagnosed with PFPS is found to be a beneficial treatment in improving functional activities such as climbing stairs or standing up from a sitting position.

Most of the physiotherapists confirmed the effective results of K Tape application over patients with patellofemoral pain syndrome except for only few participants (5%) who did not find any effective result of kinesiology tape. These results are supported by Alicia *et al.*, 2013 who investigated the effects of kinesiology tape application in physically active patients with PFPS during a traditional physical rehabilitation regimen. Both physical rehabilitation in addition to physical rehabilitation together with kinesiology tape application significantly decreased soreness as measured by simply both Visual Analog Scale (VAS) and Kujala scores by the end of a 6-week involvement (Alicia *et al.*, 2013). Similarly majority of physiotherapists in our study also used VAS scale as an outcome tool and only 30% participants used WOMAC or other scales.

In the current study closed kinetic chain exercises were the most significant finding which are evidence based exercises and used by almost half of the physiotherapists enrolled in this study. One of the study done in year 2000 showed that both open and closed kinetic chain exercise programs have improvement in strengthening and functional ability but closed kinetic chain exercise has little better results in comparison to open chain kinetic exercise (Witvrouw *et al.*, 2000)

Contradictory to this few physiotherapists in our study suggested that they found effective results using open kinetic chain exercises along with kinesiology tape in the management of patellofemoral pain syndrome. Another study by Erik Witvrouw *et al.*, in a prospective randomized study in 2004 showed the effectiveness of open kinetic chain exercise along with kinesiology tape. The open kinetic chain group (OKC) proved significantly better results on 3 items, Pain during the night, swelling, pain during descending stairs compared to the closed kinetic chain group (CKC). In another randomized controlled trial it was concluded by author that combination of open and closed kinetic chain exercises should be used in clinical practice (Minoonejad *et al.*, 2012).

In current study 18 out of 70 reported that they are using other therapy along with kinesiology tape and 2 participants use only kinesiology tape in the management of patellofemoral pain syndrome.

Question regarding type of taping technique showed positive response. More than half of the participants stated that they use Y-shape techniques, whereas limited participant using I-shape technique. In addition to it few physiotherapists expressed that they also apply donut-shaped technique and only four physiotherapists used fan-shaped technique. In literature evidence is shown for I and Y strip by Kase *et al.*, 2003 who suggests that one protocol consists of applying an I-strip over one side of the patella with 50–57% tension to make a mechanical correction. In the second option a Y-shaped strip is applied transversely from the internal side of the knee, passing a strip of bandage with 50% stretch applied over the upper pole of the patella and the other strip below the lower pole, without applying tension on the ends of the tape. As far as author's knowledge is concerned there is no evidence of donut shaped and fan shaped technique internationally and nationally.

Additional question asked in the questionnaire regarding percentage of stretch showed sufficient knowledge of physiotherapists. In response to this question participants stated that they stretched kinesiology tape 50% and 75% while only few of them stated that they applied only 25% stretch. This response is also supported by Kase *et al.*, (2003) who suggested that 50% to 75% stretch should be applied.

Author also noted that more than half of the participants (57.25%) were not using kinesiology tape in their treatment because of different issues. The most frequent issue stated by the majority of the participants (60%) is that they are not trained in application of kinesiology taping. However few participants also mentioned an alarming issue that kinesiology tape is expensive and not easily available in Karachi.

Conclusion

The results of this study suggests that though the evidence of effectiveness of application of k tape in patellofemoral pain syndrome is high still there is lack of knowledge and skills among most of the physiotherapist in our society. Study results highlighted the reasons being untrained in applying k tape, k tape as an expensive treatment and most importantly its unavailability in our part of world. Some measures should be taken to ensure the availability of k tape everywhere around the world and more Physiotherapists trainings should be given so that each patient can get the best evidence treatment.

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