WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.084
Volume 8, Issue 12, 1461-1466. Review Article ISSN 2277– 7105

# INDEPENDENT PHYSIOTHERAPY PRACTICE: CLINICAL EVALUATION AND SYSTEMATIC ILLNESS SERIES: 1

***Dr. S. S. Subramanian, (M.P.T (Orthopaedics), M.S (Education), M. Phil (Education), Ph.D (Physiotherapy)**

*The Principal, Sree Balaji College of Physiotherapy, Chennai- 100. Affiliated To (Bharath) University, BIHER Chennai- 73.

Article Received on
20 Sept. 2019,

Revised on 10 Oct. 2019,
Accepted on 30 Oct. 2019,

DOI: 10.20959/wjpr201912-16176

***Corresponding Author**
**Dr. S. S. Subramanian**
The Principal, Sree Balaji College of Physiotherapy, Chennai- 100. Affiliated To (Bharath) University, BIHER Chennai- 73.

## ABSTRACT

Independent clinical physiotherapy practice demands clinical evaluation, decision making, reference with reasoning. 48 year old female with $hba_1c$ at 13% and hypertension on medication with left supra spiratus tendinitis was on evaluation and treatment found to be hemodynamically unstable with poor exercise tolerance was referred to physician for medical management. Reasoning of why physiotherapy was deferred and medical advice was sought, were was discussed with evidence in this original research presentation, this will pave the importance of practical application of various allied, clinical subjects learned by physiotherapist and due referral to physicians advice.

## H/O

Subject of 48 year old female was treated for HT. With T. amlong for 5 years T. glycephase for DM (Diabetic Mellitus), for 10 years and was treated with a course of physiotherapy in Govt general hospital in Chennai for left shoulder pain, with a course of NSAID and left shoulder X- ray revealing supa spinatus tendinitis, the C/O subject complaining of pain and inability to use left shoulder for her daily routines.

## O/e

- Mesomorph, menstruating irregularly, mother of two adults, illiterate, home maker under stress for socio economic and family influence.
- Atrophy of left deltoid, hard and heavy left arm.
- Tender +++ over anterior, lateral shoulder (Left).
- Restricted shoulder abduction, lateral rotation and extension (Left).

- Trapezitis (Left), obliterated cervical lordosis along with moderate cervical spine movement restricted.
- Moderate left hand grip compared with right.
- Ambulant unaided.

**Need for this Presentation**

- With posterior anterior glide to shoulder and minor passive stretching of left shoulder as the subject developed dysponesa, palpitation on mild exertion the author has referred the subject for further medical advice from a physician, where $hba_1c$ was at 13%, Vitamin D3- 11ng, B.P at 134/95 mm/ng as on 10.09.2019.

**Aims & Objective** of this clinical research was when should we refer to physician and scientific reasoning to defer physiotherapy when subjects hemodynamic is unstable:

**Clinical Prognosis**

This subject with uncontrolled glycemic control was referred and getting treated by physician, the author is a waiting the subjects hemodynamic to be stable under her muscle skeletal compliants with due physiotherapy means.

**Scientific reasoning / Discussion**

**a. Why this subject was referred to the physician and deferred physiotherapy at this stage?**

**b. $hba_1c$ at 13% leads to what complications?**

- $hba_1c$ test which is the percentage of glycated hemoglobin is recommended to measure the incidence or prevalence of diabetes (Reinaver 2002). Also the efficacy of $hba_1c$ in detection of diabetes, it is an important marker to assess the micro vascular complications and plasma glucose (Kilpatrick etal 2007). The relationship between $hba_1c$ and blood glucose denoting a straight trend as recorded by researches (Mohammadi etal 2001).
- $hba_1c$ is an accurate marker of micro and macro vascular complications (Ghazanfari etal 2010).
- Glycemic control is essential in diabetes management (Middleton etal 2003) as lower levels of blood glucose leads to decreased rates of morbidity, mortality (Bevan etal 2006). Many RCT, and epidemiological studies have shown glycemic control is related to

reduced rates of retriopathy, nephropathy, neuropathy and CVD (ADA 2009) also prevention of organ damage (Khatab etal 2008).

- A high proportion of patients remain poorly controlled (Karler etal 2005) and a variety of factors including age, sex, education, smoking, BMI, type of medication, martial status duration of diabetes can influence glycemic control (Wallace etal 2000).
- Among 103 diabetic Iranian subjects with mean age of 46 years, 56% had their $hba_1c$ above 7.5% (Poor Glycemic Control) (Ghazarfari etal 2010).
- Also poor glycemic control is associated with worse cardiac and peripheral dysfunction (Demir etal 2001), inverse correlation with work capacity, (Blair etal 1996) maximum O2 uptake (Vanninen etal 1992) and exercise duration (Bacon etal 2002).
- **As referred from the above research evidences that uncontrolled / poor glycemic control as shown in this subjects $hba_1c$ at 13%, can lead to mortability, organ damage, hence timely reference of the subject for the medical management is vital, an yellow line for independent physio practice.**

**c. Low Vitamin 3can a physiotherapist work on at this stage?**

- Low vitamin D3 can have multi directional effects on CVD risks, post-menopausal, diabetes, immune disorders, cancer, increased mortality, bone mineral density and QOL (Matyjasze etal 2015).
- **Low vitamin D3 is associated with so many conditions influencing physical and mental well-being, this again as it is important for musculoskeletal metabolism, hence proper medication by physician, where again physios practical knowledge on biochemistry and its impact on physical function is stressed.**

**d. Why abnormal systemic illness, hemodynamic stability is important for physical therapists**

- Hemodynamic changes during continuous exercises were important during steady state after initial 3 or 4 minutes (Sawton and Burkart etal 1967). Exercises therapy improves exercise capacity and resting hemodynamic (Mackenzie etal 2017), where as exercises can have abnormal hemodynamic responses among COPD subjects as revealed by a noregian study (Hilde etal 2013).
- Continues non-invasive measurement of hemodynamic (Cardiac) response to sub maximal exercises is attenuated significantly in diabetic individuals as evidence of

impaired cardiac reserve and peripheral vascular response with $hba_1c$ above 8 (Joshi etal 2010) in a study among 127 subjects.

- **It is evident that uncontrolled systematic illness if treated with physiotherapeutic means can be more facilitating negative prognosis.**

**e. Does orthopaedic ailments with diagnosis, evaluation needs comprehensive management?**

- **As shown in this presentation with evidenced literature a knowledge of systematic illness, biochemistry, proper medication by physician are vital prior to treating an orthopedic subject**

## CONCLUSION

Adhering to basic evaluation, knowing the details of clinical investigations and their impact on physical exercises, developing the practice of cross reference to promote inter professional relationships ensures best quality of medical service and particularly enhance independent physiotherapy practice is the major purpose of this clinical research presentation.

## REFERENCES

1. Reinauer H, Home PD, Kanagasabapathy AS, Heuck C. Laboratory diagnosis and monitoring of diabetes mellitus. World Health organization, 2002.
2. Kilpatrick ES, Rigby AS, Atkin SL. Variability in the relationship between mean plasma glucose and HbA1c: implications for the assessment of glycemic control. Clin Chem., 2007; 53(5): 897–901.
3. Mohammadi A, Esmaeili N. Diabetes control and its relationship with HbA1c and blodd sugar. The Journal of Qazvin University of Med., 2001; (16): 23–6.
4. Ghazanfari, MSc, Ali Akbar Haghdoost, MD, PhD, and Farzaneh Zolala, MSc. A Comparison of HbA1c and Fasting Blood Sugar Tests in General Population. Int J Prev Med., 2010; 1(3): 187–194.
5. Middleton J: The effect of case management on glycemic control in patients with type 2 diabetes. The Case Manager, 2003; 14: 43-47. 10.1016/j.casemgr.2003.09.007.
6. Bevan JL: Diabetes mellitus: a review of select ADA standards for 2006. J Nurse Pract., 2006; 2: 674-679. 10.1016/j.nurpra.2006.07.001.
7. American Diabetes Association. Standards of medical care in diabetes--2009. Diabetes Care., 2009; 32: S13–S61.

8. Khattab M, Khader YS, Al-Khawaldeh A, Ajlouni K. Factors associated with poor glycemic control among patients with type 2 diabetes. J Diabetes Complications., 2003; 24: 84–89. doi: 10.1016/j.jdiacomp.2008.12.008
9. Karter AJ, Moffet HH, Liu J, Parker MM, Ahmed AT, Ferrara A, Selby JV. Achieving good glycemic control: initiation of new antihyperglycemic therapies in patients with type 2 diabetes from the Kaiser Permanente Northern California Diabetes Registry. Am J Manag Care., 2005; 11: 262–270.
10. Wallace TM, Matthews DR. Poor glycaemic control in type 2 diabetes: a conspiracy of disease, suboptimal therapy and attitude. QJM., 2000; 93: 369–374. doi: 10.1093/qjmed/93.6.369.
11. Ghazanfari, Shamsaddin Niknami, and Ali Montazeri. Determinants of glycemic control in female diabetic patients: a study from Iran. Lipids Health Dis., 2010; 9: 83.
12. Demir, Cengiz Ermis, Hasan Altunbas Serum HbA1c Levels and Exercise Capacity in Diabetic Patients. Article *in* Japanese Heart Journal, 2001; 42(5): 607-16 · September *with*10 Reads.
13. Blair SN, Kampert JB, Kohl HW, III, et al. Influences of cardiorespiratory fitness and other precursors on cardiovascular disease and all-cause mortality in men and women. JAMA., 1996; 276(3): 205–210.
14. Vanninen t, M. Uusitupa e, O. Siitonen 3, J. Laitinen 2 and E. L~insimies. Habitual physical activity, aerobic capacity and metabolic control in patients with newly-diagnosed Type 2 (non-insulin-dependent) diabetes mellitus: effect of 1-year diet and exercise intervention. Diabetologia, 1992; 35: 340-346.
15. Bacon C.J., Hookway S. (2002) The effect of musical selections on submaximal exercise parameters and self-selected exercise intensity in aerobics participants. 12th Commonwealth International Sport conference, July 2002, Manchester, United Kingdom. Abstract Book, London: Association of Commonwealth Universities, 119.
16. Matyjaszek-Matuszek, Monika Lenart-Lipińska, and Ewa Woźniakowska. Clinical implications of vitamin D deficiency. Prz Menopauzalny., 2015; 14(2): 75–81.
17. E Sowton and F Burkart. Haemodynamic changes during continuous exercise. Br Heart J., 1967; 29(5): 770–774.
18. Mackenzie KJ, Carroll P, Martin CA[1], Murina O, Fluteau A, Simpson DJ, Olova N. cGAS surveillance of micronuclei links genome instability to innate immunity. Nature., 2017 24; 548(7668): 461-465. doi: 10.1038/nature23449. Epub 2017 Jul 24.

19. Hilde JM, Skjørten I, Hansteen V, Melsom MN, Hisdal J, Humerfelt S, Steine K. Haemodynamic responses to exercise in patients with COPD. Eur Respir J., 2013; 41(5): 1031-41. doi: 10.1183/09031936.00085612. Epub 2012 Aug 16.
20. Joshi D, Shiwalkar A, Cross MR, Sharma SK, Vachhani A, Dutt C. Continuous, non-invasive measurement of the haemodynamic response to submaximal exercise in patients with diabetes mellitus: evidence of impaired cardiac reserve and peripheral vascular response. Heart., 2010; 96(1): 36-41. doi: 10.1136/hrt.2009.177113. Epub 2009 Oct 22.