A study of the Impact of P.E.M.F. Treatment on Osteoarthritis Progression

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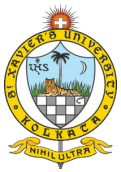

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Pulsed Electromagnetic Fields (P.E.M.F.) Treatment:

It helps reduce pain and inflammation in bones, muscles and joints.This is why it is particularly indicated and used in case of patients suffering from osteoporosis, arthrosis, arthritis or joint pain. But also for bone consolidation after fractures, for reabsorption of bone oedema and in many other cases.
In the dataset here 5 measurements are taken as factors :

- Pain
- Tenderness
- Swelling
- Joint Disability
- Joint Deformity

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- Test the treatment is effective or not.
- Observed the improvements over time.
- identify covariates influencing treatment success

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- Euclidean Distance.
- Wilcoxon Sign Rank Test.
- Cox Proportional Hazard Model.

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Demographic Data

Sl. No.	Name	Address	Age	Sex	Ethnicity	Occupation
1	########	########	42	F	Hindu	Business
2	########	########	58	F	Hindu	Housewife
3	########	########	64	M	Hindu	Retired Man
4	########	########	38	F	Hindu	School Teacher
5	########	########	49	F	Hindu	Business
6	########	########	68	F	Hindu	Housewife
7	########	########	32	F	Hindu	Airlines Receptionist
8	########	########	45	F	Hindu	Bank Clerk
9	########	########	54	F	Hindu	Housewife
10	########	########	37	F	Hindu	Sales-Girl
11	########	########	40	F	Hindu	Aaya
12	########	########	62	F	Hindu	Housewife
⋮	⋮	⋮	⋮	⋮	⋮	⋮
301	########	########	43	F	Hindu	Nurse
302	########	########	54	F	Hindu	Maid Servant
303	########	########	59	F	Hindu	Housewife

Observations of 5 measurements of patients

				ADJUSTMENT PHASE				P.E.M.F. TREATMENT PHASE																		
1	Patient No.		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	1	PAIN	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Ni	Ni	Ni	Ni	Ni	Ni	Ni	Ni				Ni
		TENDERNESS	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Ni	Ni	Ni	Ni	Ni	Ni	Ni	Ni				Ni
		SWELLING	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Ni	Ni	Ni	Ni	Ni	Ni	Ni	Ni				Ni
		JOINT DISABILITY	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Ni	Ni	Ni	Ni	Ni	Ni	Ni	Ni				Ni
		JOINT DEFORMITY	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi				Mi
2	Patient No.																										
	2	PAIN	Mi	Mi	Mi	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Ni	Ni				Ni
		TENDERNESS	Mi	Mi	Mi	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Ni	Ni				Ni
		SWELLING	Mi	Mi	Mi	Mi	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Ni				Mi
		JOINT DISABILITY	Mi	Mi	Mi	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Ni	Ni				Ni
		JOINT DEFORMITY	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi				Mi
3	Patient No.																										
	3	PAIN	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Ni	Ni	Ni	Ni	Ni	Ni	Ni				Ni
		TENDERNESS	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Ni	Ni	Ni	Ni	Ni	Ni	Ni				Ni
		SWELLING	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Ni	Ni	Ni	Ni	Ni	Ni	Ni				Ni
		JOINT DISABILITY	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Ni	Ni	Ni	Ni	Ni	Ni	Ni				Ni
		JOINT DEFORMITY	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi				Mi
4	Patient No.																										
	4	PAIN	Mi	Mi	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Ni	Ni	Ni				Ni
		TENDERNESS	Mi	Mi	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Ni	Ni	Ni				Ni
		SWELLING	Mi	Mi	Mi	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Ni				Ni
		JOINT DISABILITY	Mi	Mi	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Ni	Ni	Ni				Ni
		JOINT DEFORMITY	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi				Mi
5	Patient No.		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	5	PAIN	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Ni	Ni				Ni
		TENDERNESS	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Ni	Ni				Ni
		SWELLING	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Ni				Ni
		JOINT DISABILITY	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Ni	Ni				Ni
		JOINT DEFORMITY	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi				Mi
6	Patient No.																										
	6	PAIN	Mi	Mi	Mi	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Ni	Ni				Ni
		TENDERNESS	Mi	Mi	Mi	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Ni	Ni				Ni
		SWELLING	Mi	Mi	Mi	Mi	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Ni				Mi
		JOINT DISABILITY	Mi	Mi	Mi	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mo	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Ni	Ni				Ni
		JOINT DEFORMITY	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi				Mi

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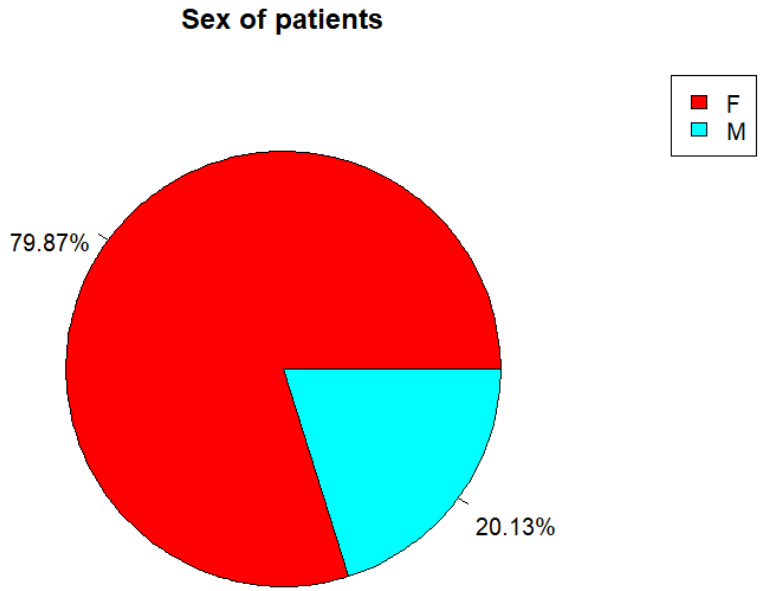

Figure 1: Fig:2

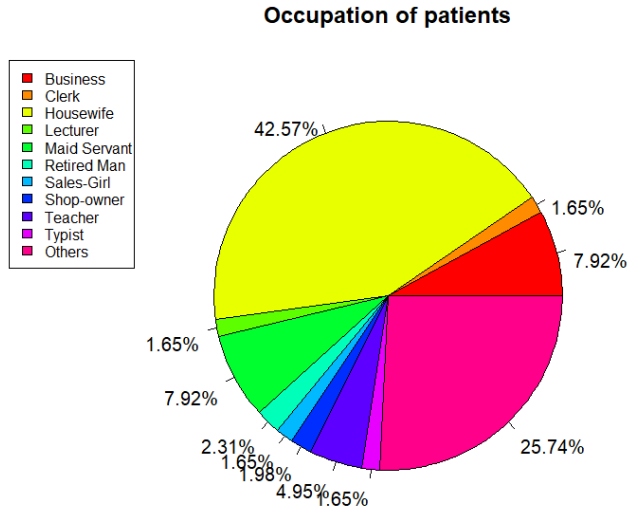

Figure 2: Fig:2

Percentage of female patient is more than male as per the data , And also the percentage of housewife is a more than the other occupations. [1]

[1] Note : Others :Ayah, Airlines Receptionist, Book-binder, Bus Driver, Electric Technician, Lawyer, Temple-Keeper, X-Ray Technician, Health Worker, Goldsmith, Vendor, Social worker, tailor, Stenographer, Security Guard, Temple keeper

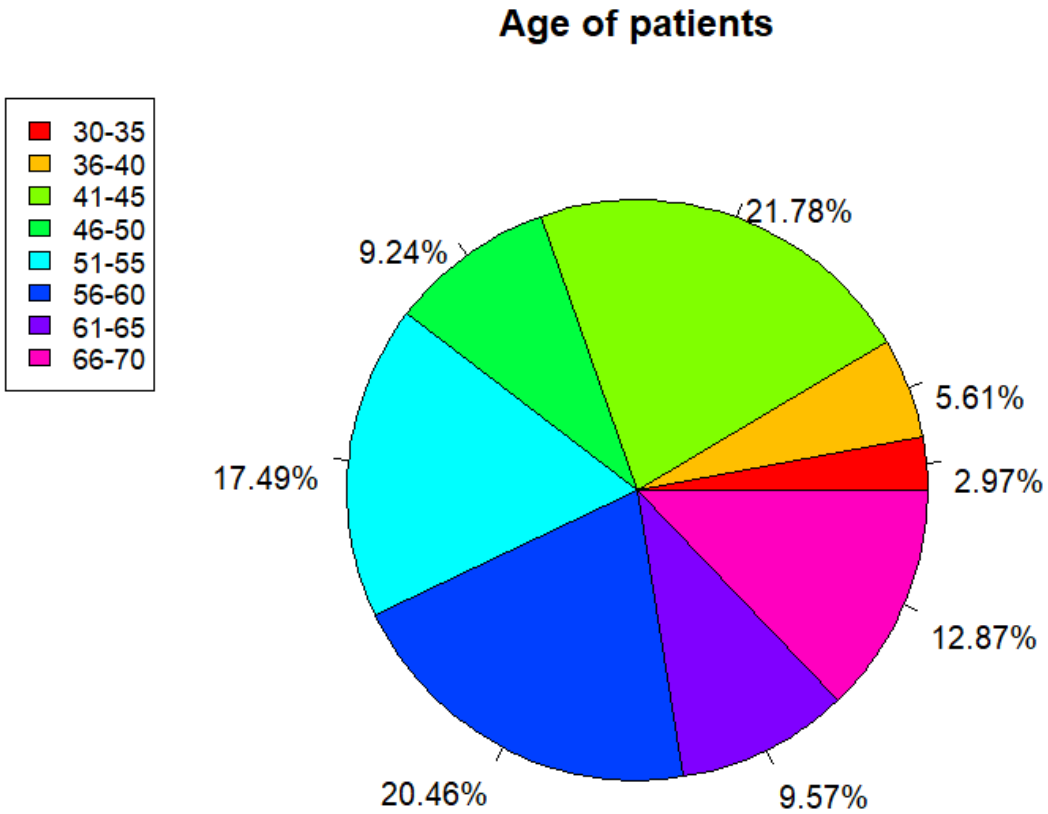

Figure 3: Fig:3

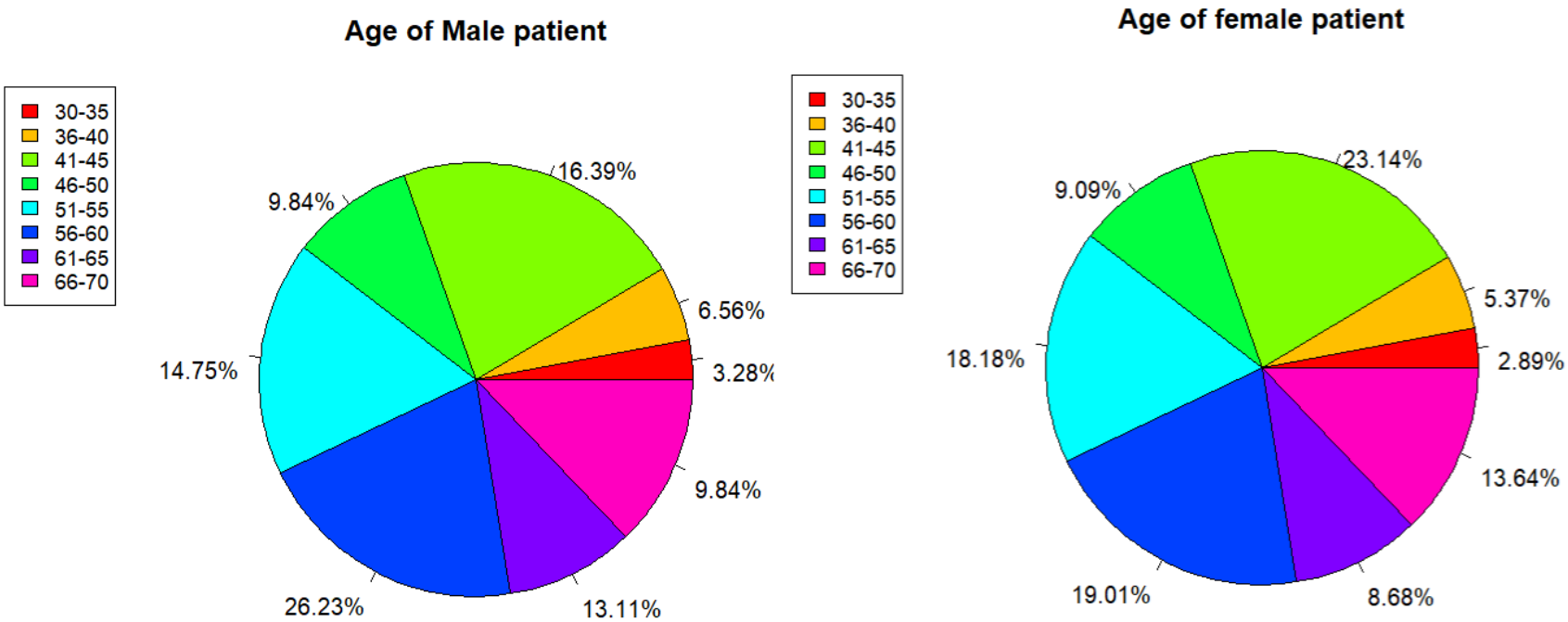

Figure 4: Fig:4

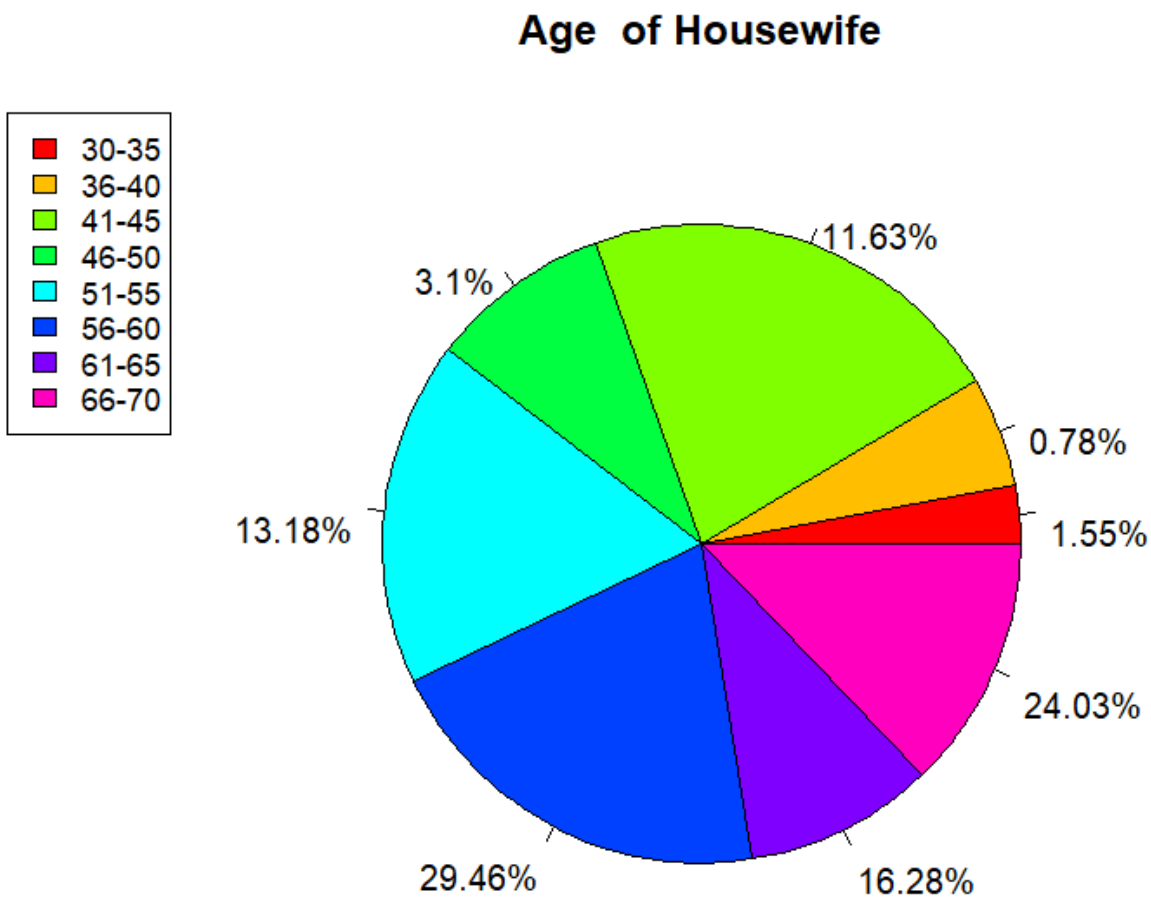

Figure 5: Fig:5

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We replace Mo with 2, Mi with 1, and Ni with 0

		W0	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14	W15	W16	W17	W18	W19	W20	W24
Patient No.1	PAIN	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
	TENDERNESS	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
	SWELLING	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
	JOINT DISABILITY	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
	JOINT DEFOR1TY	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Patient No. 2	PAIN	1	1	1	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	0	0	0
	TENDERNESS	1	1	1	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	0	0	0
	SWELLING	1	1	1	1	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	0	1
	JOINT DISABILITY	1	1	1	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	0	0
	JOINT DEFOR1TY	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Patient No.3	PAIN	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	TENDERNESS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	SWELLING	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	JOINT DISABILITY	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	JOINT DEFOR1TY	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Patient No.4	PAIN	1	1	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	0	0	0	0
	TENDERNESS	1	1	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	0	0	0	0
	SWELLING	1	1	1	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	0	0
	JOINT DISABILITY	1	1	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	0	0	0	0
	JOINT DEFOR1TY	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Patient No.5	PAIN	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	0	0	0
	TENDERNESS	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	0	0	0
	SWELLING	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	0	0
	JOINT DISABILITY	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	0	0	0
	JOINT DEFOR1TY	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Patient No.6	PAIN	1	1	1	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	0	0	0
	TENDERNESS	1	1	1	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	0	0	0
	SWELLING	1	1	1	1	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	0	1
	JOINT DISABILITY	1	1	1	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	0	0	0
	JOINT DEFOR1TY	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

We calculate the Euclidean Distance for every week Vector (Pain, Tenderness, Swelling, Joint Disability, Joint Deformity) from the vector (0,0,0,0,0)

Patient No	Age	Sex	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14	W15	W16	W17	W18	W19	W20	W24
1	42	F	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	1	1	1	1	1	1	1	1	1
2	58	F	2.23607	2.23607	3.74166	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	2.82843	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	1.41421	1	1.41421
3	64	M	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	1	1	1	1	1	1	1	1
4	38	F	2.23607	3.74166	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	1.41421	1.41421	1	1
5	49	F	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	1.41421	1	1
6	68	F	2.23607	2.23607	3.74166	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	1.41421	1	1.41421
7	32	F	2.23607	2.23607	2.23607	3.74166	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	1.41421	1.41421	1
8	45	F	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	1	1	1	1	1	1	1	1	1
9	54	F	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	1	1	1	1	1	1	1	1	1
10	37	F	2.23607	3.74166	3.74166	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	1	1
11	40	F	2.23607	2.23607	2.23607	3.74166	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	1.41421	1
12	62	F	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	1	1	1	1	1	1	1	1	1
13	53	M	2.23607	3.74166	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	1	1
14	48	F	2.23607	2.23607	3.74166	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	1	1	1.41421
15	65	F	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	1	1	1	1	1	1	1	1
16	43	F	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	1	1	1	1	1	1	1	1	1
17	51	F	2.23607	2.23607	3.74166	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607
18	55	F	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	1	1	1	1	1	1	1	1
19	60	F	2.23607	3.74166	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	1.41421	1
20	41	F	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	1	1	1	1	1	1	1	1	1
21	56	F	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	1	1
22	63	M	2.23607	2.23607	3.74166	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	2.82843	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	1.41421	1	1.41421
23	43	F	2.23607	2.23607	2.23607	3.74166	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	1	1
24	49	F	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	1	1	1	1	1	1	1	1
25	69	F	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	1	1	1	1	1	1	1	1	1
26	52	F	2.23607	2.23607	3.74166	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	1.41421	1	1.41421
27	57	M	2.23607	2.23607	2.23607	3.74166	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607
28	44	F	2.23607	2.23607	2.23607	3.74166	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	1.41421	1.41421	1
29	66	F	2.23607	3.74166	3.74166	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	4.12311	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	1.41421	1.41421	1	1
30	70	F	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	2.23607	1	1	1	1	1	1	1	1

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Normality Test

Week	P-Value	
W1	5.46E-29	Not Normal
W2	6.82E-25	Not Normal
W3	5.11E-21	Not Normal
W4	2.94E-21	Not Normal
W5	1.86E-23	Not Normal
W6	1.86E-23	Not Normal
W7	1.86E-23	Not Normal
W8	1.86E-23	Not Normal
W9	1.86E-23	Not Normal
W10	1.86E-23	Not Normal
W11	2.39E-24	Not Normal
W12	2.00E-03	Not Normal
W13	1.14E-26	Not Normal
W14	1.86E-23	Not Normal
W15	1.86E-23	Not Normal
W16	1.86E-23	Not Normal
W17	1.86E-23	Not Normal
W18	9.38E-23	Not Normal
W19	1.00E-19	Not Normal
W20	3.29E-25	Not Normal
W24	4.02E-25	Not Normal

Pairwise Wilcoxon Signed-Rank Test Results for weeks (W4 to W24)

Column1	Column2	P_Value	Significance_Difference	Column1	Column2	P_Value	Significance_Difference	Column1	Column2	P_Value	Significance_Difference
W4	W5	4.44E-12	Yes	W7	W11	1.97E-21	Yes	W11	W16	7.46E-30	Yes
W4	W6	4.44E-12	Yes	W7	W12	1.89E-36	Yes	W11	W17	7.46E-30	Yes
W4	W7	4.44E-12	Yes	W7	W13	8.49E-40	Yes	W11	W18	5.12E-31	Yes
W4	W8	4.44E-12	Yes	W7	W14	5.66E-46	Yes	W11	W19	3.80E-36	Yes
W4	W9	4.44E-12	Yes	W7	W15	5.66E-46	Yes	W11	W20	5.25E-43	Yes
W4	W10	4.44E-12	Yes	W7	W16	5.66E-46	Yes	W11	W24	2.17E-43	Yes
W4	W11	5.90E-20	Yes	W7	W17	5.66E-46	Yes	W12	W13	2.06E-11	Yes
W4	W12	1.84E-30	Yes	W7	W18	1.56E-45	Yes	W12	W14	2.44E-21	Yes
W4	W13	7.83E-37	Yes	W7	W19	1.02E-43	Yes	W12	W15	2.44E-21	Yes
W4	W14	4.25E-44	Yes	W7	W20	1.00E-43	Yes	W12	W16	2.44E-21	Yes
W4	W15	4.25E-44	Yes	W7	W24	1.06E-43	Yes	W12	W17	2.44E-21	Yes
W4	W16	4.25E-44	Yes	W8	W9	> 0.05	No	W12	W18	1.26E-21	Yes
W4	W17	4.25E-44	Yes	W8	W10	> 0.05	No	W12	W19	9.30E-30	Yes
W4	W18	6.63E-44	Yes	W8	W11	1.97E-21	Yes	W12	W20	4.44E-44	Yes
W4	W19	2.78E-43	Yes	W8	W12	1.89E-36	Yes	W12	W24	1.95E-44	Yes
W4	W20	1.69E-43	Yes	W8	W13	8.49E-40	Yes	W13	W14	2.06E-11	Yes
W4	W24	2.74E-43	Yes	W8	W14	5.66E-46	Yes	W13	W15	2.06E-11	Yes
W5	W6	> 0.05	No	W8	W15	5.66E-46	Yes	W13	W16	2.06E-11	Yes
W5	W7	> 0.05	No	W8	W16	5.66E-46	Yes	W13	W17	2.06E-11	Yes
W5	W8	> 0.05	No	W8	W17	5.66E-46	Yes	W13	W18	6.71E-12	Yes
W5	W9	> 0.05	No	W8	W18	1.56E-45	Yes	W13	W19	2.49E-21	Yes
W5	W10	> 0.05	No	W8	W19	1.02E-43	Yes	W13	W20	1.32E-34	Yes
W5	W11	1.97E-21	Yes	W8	W20	1.00E-43	Yes	W13	W24	4.32E-35	Yes
W5	W12	1.89E-36	Yes	W8	W24	1.06E-43	Yes	W14	W15	> 0.05	No
W5	W13	8.49E-40	Yes	W9	W10	> 0.05	No	W14	W16	> 0.05	No

Pairwise Wilcoxon Signed-Rank Test Results for weeks (W4 to W24)

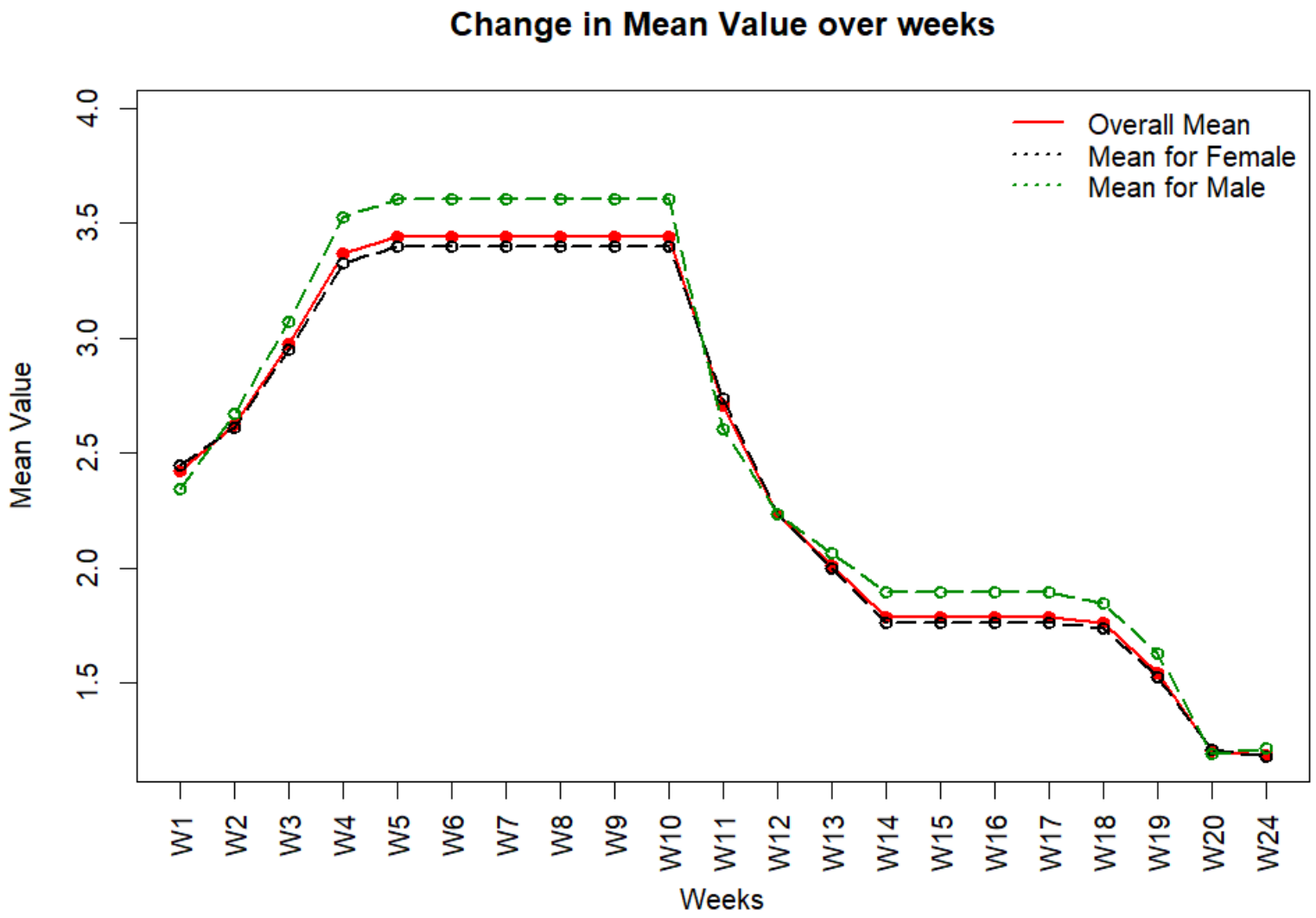
W5	W14	5.66E-46	Yes	W9	W11	1.97E-21	Yes	W14	W17	> 0.05	No
W5	W15	5.66E-46	Yes	W9	W12	1.89E-36	Yes	W14	W18	0.00596208	Yes
W5	W16	5.66E-46	Yes	W9	W13	8.49E-40	Yes	W14	W19	2.47E-14	Yes
W5	W17	5.66E-46	Yes	W9	W14	5.66E-46	Yes	W14	W20	2.65E-25	Yes
W5	W18	1.56E-45	Yes	W9	W15	5.66E-46	Yes	W14	W24	5.75E-26	Yes
W5	W19	1.02E-43	Yes	W9	W16	5.66E-46	Yes	W15	W16	> 0.05	No
W5	W20	1.00E-43	Yes	W9	W17	5.66E-46	Yes	W15	W17	> 0.05	No
W5	W24	1.06E-43	Yes	W9	W18	1.56E-45	Yes	W15	W18	0.00596208	Yes
W6	W7	> 0.05	No	W9	W19	1.02E-43	Yes	W15	W19	2.47E-14	Yes
W6	W8	> 0.05	No	W9	W20	1.00E-43	Yes	W15	W20	2.65E-25	Yes
W6	W9	> 0.05	No	W9	W24	1.06E-43	Yes	W15	W24	5.75E-26	Yes
W6	W10	> 0.05	No	W10	W11	1.97E-21	Yes	W16	W17	> 0.05	No
W6	W11	1.97E-21	Yes	W10	W12	1.89E-36	Yes	W16	W18	0.00596208	Yes
W6	W12	1.89E-36	Yes	W10	W13	8.49E-40	Yes	W16	W19	2.47E-14	Yes
W6	W13	8.49E-40	Yes	W10	W14	5.66E-46	Yes	W16	W20	2.65E-25	Yes
W6	W14	5.66E-46	Yes	W10	W15	5.66E-46	Yes	W16	W24	5.75E-26	Yes
W6	W15	5.66E-46	Yes	W10	W16	5.66E-46	Yes	W17	W18	0.00596208	Yes
W6	W16	5.66E-46	Yes	W10	W17	5.66E-46	Yes	W17	W19	2.47E-14	Yes
W6	W17	5.66E-46	Yes	W10	W18	1.56E-45	Yes	W17	W20	2.65E-25	Yes
W6	W18	1.56E-45	Yes	W10	W19	1.02E-43	Yes	W17	W24	5.75E-26	Yes
W6	W19	1.02E-43	Yes	W10	W20	1.00E-43	Yes	W18	W19	1.17E-12	Yes
W6	W20	1.00E-43	Yes	W10	W24	1.06E-43	Yes	W18	W20	1.10E-24	Yes
W6	W24	1.06E-43	Yes	W11	W12	2.76E-15	Yes	W18	W24	1.91E-25	Yes
W7	W8	> 0.05	No	W11	W13	7.82E-22	Yes	W19	W20	3.17E-19	Yes
W7	W9	> 0.05	No	W11	W14	7.46E-30	Yes	W19	W24	2.55E-17	Yes
W7	W10	> 0.05	No	W11	W15	7.46E-30	Yes	W20	W24	0.65736831	No

Wilcoxon Signed-Rank Test Results Between consecutive weeks

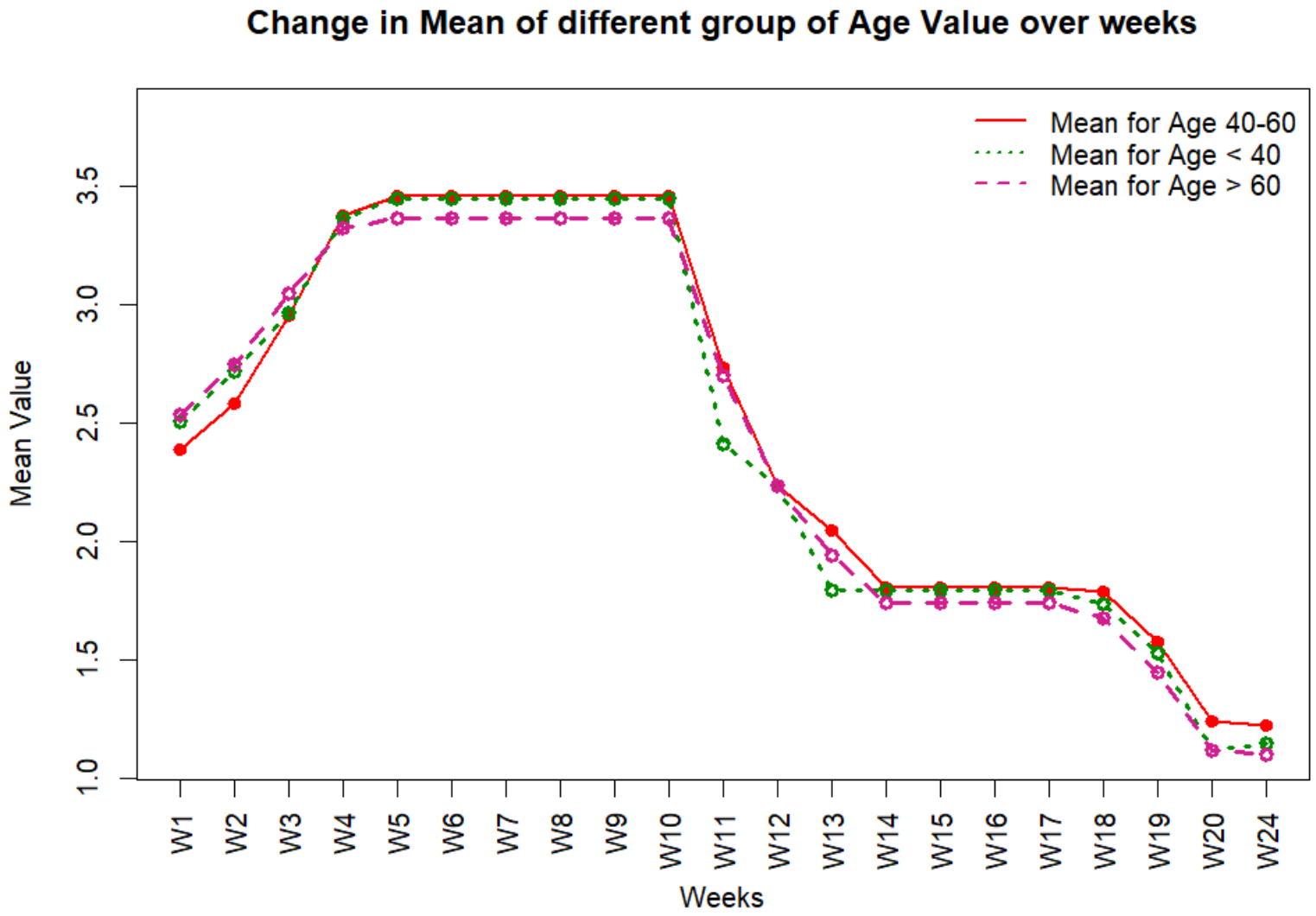
Column1	Column2	P-Value	Significance Difference
W4	W5	4.44E-12	Yes
W5	W6	> 0.05	No
W6	W7	> 0.05	No
W7	W8	> 0.05	No
W8	W9	> 0.05	No
W9	W10	> 0.05	No
W10	W11	1.97E-21	Yes
W11	W12	2.76E-15	Yes
W12	W13	2.06E-11	Yes
W13	W14	2.06E-11	Yes
W14	W15	> 0.05	No
W15	W16	> 0.05	No
W16	W17	> 0.05	No
W17	W18	0.00596208	Yes
W18	W19	1.17E-12	Yes
W19	W20	3.17E-19	Yes

Column1	Column2	P-Value	Significance Difference
W4	W5	4.44E-12	Yes
W4	W20	1.69E-43	Yes
W5	W20	1.00E-43	Yes
W4	W24	2.74E-43	Yes
W20	W24	0.657368308	No

Change in mean value over the weeks



Change in mean value over the weeks



Data for Cox- Proportional Hazard Model

id	Succes in Last week	start	stop	distance	succes	week	age	sex
1	1	0	1	2.23607	0	9	42	F
1	1	1	2	2.23607	0	9	42	F
1	1	2	3	2.23607	0	9	42	F
1	1	3	4	2.23607	0	9	42	F
1	1	4	5	2.23607	0	9	42	F
1	1	5	6	2.23607	0	9	42	F
1	1	6	7	2.23607	0	9	42	F
1	1	7	8	2.23607	0	9	42	F
1	1	8	9	2.23607	1	9	42	F
2	1	0	1	4.12311	0	16	58	F
2	1	1	2	4.12311	0	16	58	F
2	1	2	3	4.12311	0	16	58	F
2	1	3	4	4.12311	0	16	58	F
2	1	4	5	4.12311	0	16	58	F
2	1	5	6	4.12311	0	16	58	F
2	1	6	7	4.12311	0	16	58	F
2	1	7	8	2.82843	0	16	58	F
2	1	8	9	2.23607	0	16	58	F
2	1	9	10	2.23607	0	16	58	F
2	1	10	11	2.23607	0	16	58	F
2	1	11	12	2.23607	0	16	58	F
2	1	12	13	2.23607	0	16	58	F
2	1	13	14	2.23607	0	16	58	F
2	1	14	15	2.23607	0	16	58	F
2	1	15	16	1.41421	1	16	58	F

Cox- Proportional Hazard Model

	coef	exp(coef)	se(coef)	z	p Value
distance	-0.955813	0.384499	0.261499	-3.655	0.000257 ***
age	-0.001689	0.998313	0.007844	-0.215	0.829535
sexM	0.005105	1.005118	0.180922	0.028	0.977490

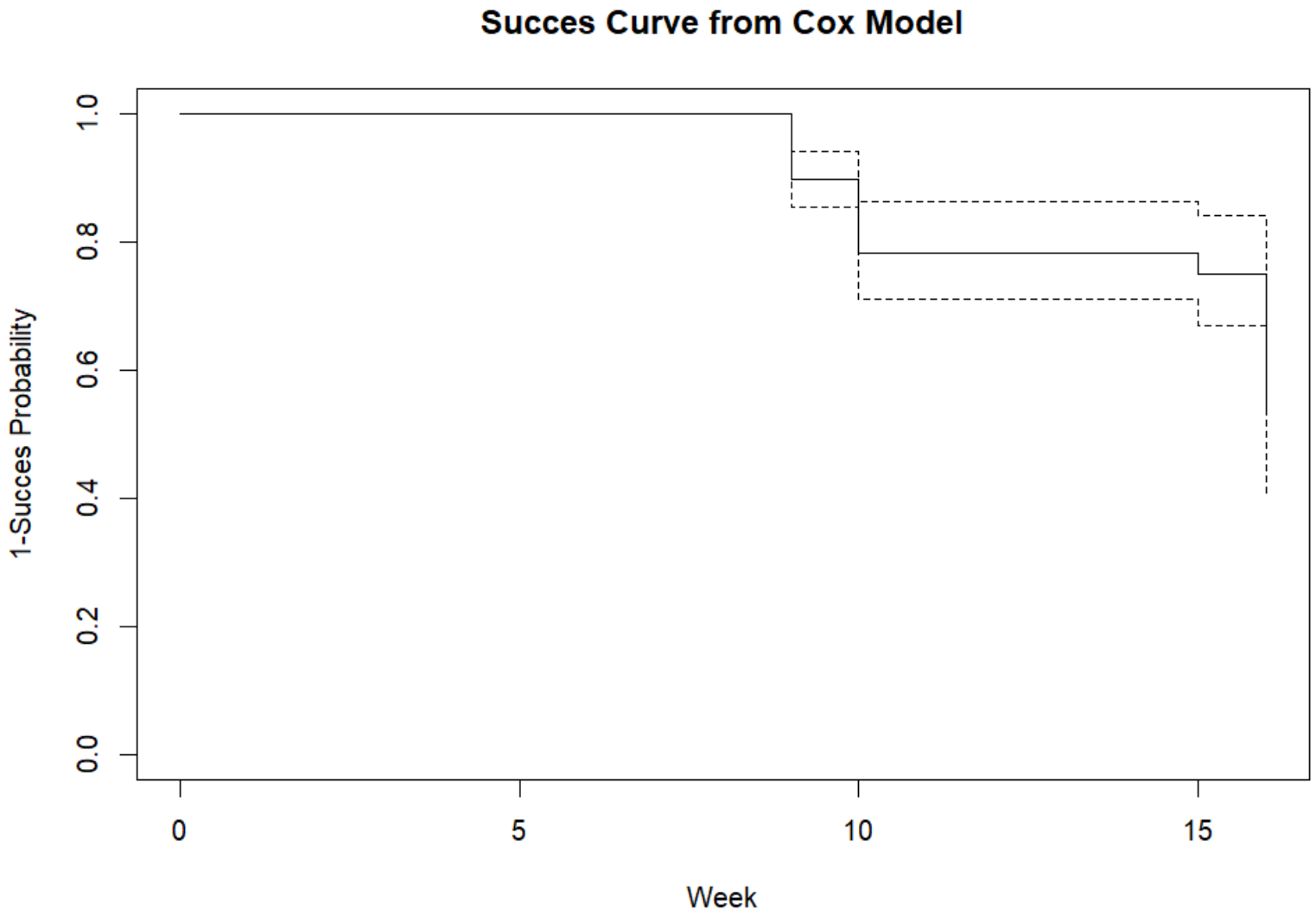
Table 5.1: Cox Proportional Hazards Model Summary

	exp(coef)	exp(-coef)	lower .95	upper .95
distance	0.3845	2.6008	0.2303	0.6419
age	0.9983	1.0017	0.9831	1.0138
sexM	1.0051	0.9949	0.7050	1.4329

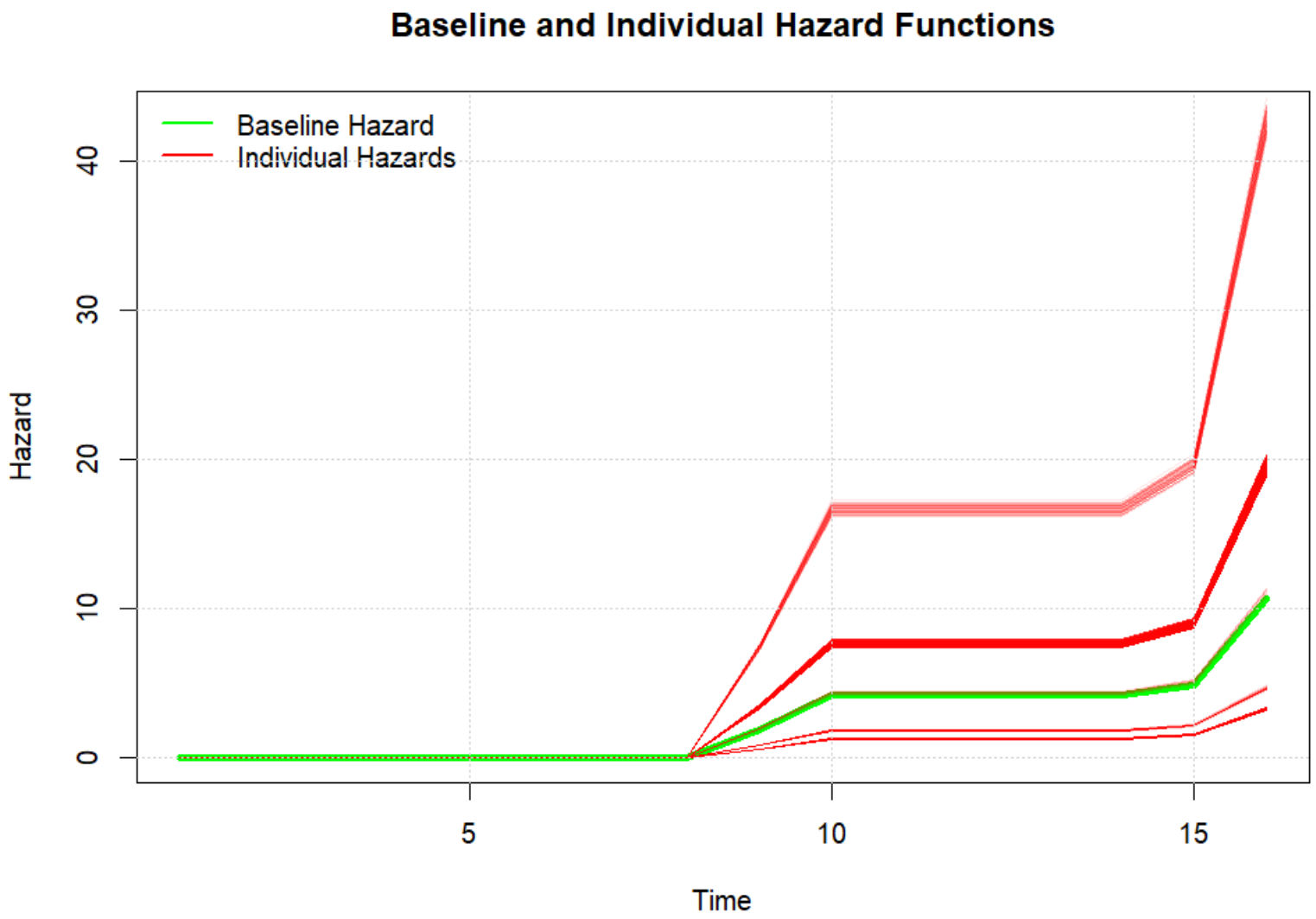
Table 5.2: Exponentiated Coefficients and Confidence Intervals

Test	Statistic	df	p Value
Likelihood ratio test	12.96	3	0.005
Score (logrank) test	14.11	3	0.003

Success Curve



Hazard Function Plot



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Thank You