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The influence of Antonovsky's sense of coherence on admission and psychosocial functioning

A clinical controlled trial of schizophrenic outpatients in psychoeducative multi-family intervention

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Abstract

Objective Psychosocial interventions can reduce admission rates and enhance the psychosocial functioning of patients suffering from schizophrenia. This study investigates the influence of Antonovsky's sense of coherence on psychosocial functioning and admission rate among participants of psychoeducative multi-family groups (PG) compared to a control group (CG).

Method 46 schizophrenic outpatients participated in a prospective study. They got treatment as usual in the psychiatric ambulance. Additionally they could choose participation with their relatives in the PG or join the CG. Patients were assessed with the Sense of Coherence scale (SOC-29) and the Global Assessment of Functioning scale (GAF). Admission rates (AR) were conducted from the hospitals basic documentation.

Results Before intervention PG and CG had a comparable AR, but the PG had significant lower GAF scores. After intervention the PG had a significant lower AR and higher GAF scores than the CG. In a comparison of subgroups (high vs. low SOC scores) PG participants with low SOC scores could reduce significantly their AR and enhance their GAF scores. Notably, all patients with high SOC scores had the lowest AR within all three measurement points.

Conclusion PG participants, especially those with low SOC scores, had a considerable profit in regards to AR and GAF compared to the CG. After intervention they showed the same AR and GAF scores as patients with high SOC scores. Implications for clinical practice and economic decisions are a pre-selection of patients with low SOC levels for targeted interventions and more therapeutic efforts to enhance the SOC.

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Introduction

Psychosocial interventions, and especially family interventions, are highly recommended by clinical guidelines for schizophrenia (1-2). Certain references state that treatment approaches which include psychosocial interventions are more effective for patients suffering from schizophrenia than approaches without such interventions (3). Many studies have shown that psychosocial interventions could reduce the relapse rates of patients suffering from schizophrenia significantly at an average of 20% (4; 8). But till now, it remains an open question, which group of patients benefits most from these interventions.

Psychoeducation as a special kind of psychosocial intervention is one of the standard treatments for schizophrenia beside an adequate antipsychotic medication (1; 2; 5). Psychoeducational interventions can reduce the relapse and readmission rates and enhance psychosocial functioning (6-7). This approach seems to be most effective when relatives are included into the treatment. In that case readmission rates can be reduced by 20% (4;8). With regard to special outcomes, multi-family interventions seem to be superior to single family interventions. McFarlane et al (9) found a relapse rate of 16% in the multi-family group and 27% in the single family treatment two years after intervention. In particular multi-family interventions can help to prevent isolation and offer an expanded social network for the participating families (10; 11). Although interventions lasting longer than 3 months are superior to shorter interventions, the results of the Munich PIP-Study showed that short interventions with eight sessions for

schizophrenic patients and their relatives had a positive long-term effect concerning readmission rate and hospital days compared to a control group. In a 7-year follow up, the rate of rehospitalisation per patient in the intervention group was 1.5 (n = 24) and 2.9 (n = 24) in the control group (12).

Schizophrenia is a severe illness that tends to chronicise. With an increasing length of the disease schizophrenic patients can loose their former social network. Therefore, family members are more and more involved in the assistance of the patients. They play an important role in providing help and support in social as well as in clinical domains of need (13). In contrast to every day clinical practice, family members are only infrequently involved in the treatment (14). On account of this, psychoeducative family intervention (15) is an option to close the gap between the wide deficiency of family related treatment offers and the need of imparting knowledge about the disease and providing effective support to the affected families. This intervention was conceptualized as a health promoting approach and adapted to the special needs of patients suffering from schizophrenia and their parents, siblings or partners.

A previous but not controlled study could demonstrate an enhancement of knowledge about the disease and the family climate as well as a reduction of the relapse rates and specific psychopathological symptoms within the participating patients of multi-family interventions (15). A further longitudinal study explored the influence of Antonovsky's sense of coherence (SOC) on schizophrenic patients' perceived quality of life (QOL) among participants of multi family groups. The SOC describes a person's belief that every day stressors are more or less comprehensible, manageable and meaningful. A strong SOC can activate personal or social resistance resources and lead to a healthier life (16). Group participants with a high SOC level could enhance their QOL scores, in contrast to a control group, to nearly the same level as the norm population. But especially participants with a low SOC level had the greatest over all progress from this intervention due to their QOL scores within a one-year period (17-18).

To our knowledge no other study had investigated the influence of the level of SOC as an independent variable on specific interventions for schizophrenic patients. But many studies had confirmed the influence and predictive value of the SOC on health related outcomes (19, 20). A recent study showed that the SOC was a strong predictor for a one-year prognosis of delusions when expressed emotion or depression was high in the acute state of schizophrenia (21). In a Swedish study, the SOC of schizophrenic patients was positively related to general health, subjective quality of life, global psychosocial functioning and global well-being (22). The outcomes of a non-clinical couple therapy study showed that a relatively short treatment was able to improve the SOC and reduce psychiatric symptoms (23). In a polish study, 101 patients with neurotic disorders took part in 10 sessions of a psychotherapeutic program. A significant enhancement of the SOC was found in patients with low SOC levels, while patients with high SOC levels had no observable changes. These effects remained stable over a six month period (24).

This study contributed to the evaluation of a three year pilot project for the implementation of an integrated health care unit for patients suffering from schizophrenia. The aim of this project was to improve the standard care for schizophrenic out-patients by providing a complete health promoting treatment option for schizophrenic patients and their family members or partners. Health promoting interventions are most effective when they are based on voluntary participation. In general, voluntary participants should have more intrinsic motivation to change their health related attitudes and behaviour than participants of prescribed treatment offers.

Therefore, one question of this study was how patients who voluntarily decide to participate in this kind of intervention might be characterized. Additionally, the study explored prospectively whether the level of SOC had an influence on the admission- and readmission rate (AR) and the psychosocial functioning (GAF) within participants of psychoeducative multi-family groups (PG) compared to a control group (CG). AR and GAF are widely used as indicators for the course of disease of schizophrenic patients (3-4; 7-8). It was hypothesised that patients with a high SOC level in general have a lower AR and a higher level of GAF scores than patients with low SOC levels. Therefore patients with a low SOC level should have the greatest benefits from participation in a PG due to their AR and GAF.

Methods

According to Bäuml et al (2007) who claimed that further research should continue to integrate family interventions into routine clinical settings (25), the study was first conceptualized as a waiting control group design in every day clinical practice. Due to organisational problems this design had to be rejected and changed to a prospectively designed field study. To be included in the study, patients needed (A) to have a diagnosis of schizophrenia according to ICD-10 (26), (B) to have had an acute schizophrenic episode within the last 3 months

with hospital admission and at present being in remission and (C) to have close connections to their family or a partner. Excluded were patients with an acute substance abuse and/or extreme cognitive disabilities. The ethical approval for this study was obtained from the Ethic Commission, Department of Psychology, Technische Universität Darmstadt (Germany).

The participating patients were recruited twice a year in a four week period in the acute wards of the Vitos Philippshospital Riedstadt (Germany) before discharge. After discharge all patients got treatment as usual including antipsychotic medication in the hospitals' psychiatric ambulance. To prove the indication for the multi-family intervention, patients could choose voluntarily if they wanted to participate with a family member or a partner in the PG (n = 25) or wanted to join the CG (n = 21). From February 2008 to June 2010, six PGs were conducted altogether. The PG size varied from 9 to 11 participants, each group consisting of 3 to 5 patients and 5 to 7 relatives. Each PG had ten training and two booster sessions. The groups were led by a psychiatrist and a psychologist and met once a week for two hours. The target of the PG was, on the one side, to improve the knowledge and manageability of the disease and, on the other side, to enhance the communication between the patients and their family members. First, participants got information about the disease, treatment options and strategies of crisis prevention and second, techniques from behavioural therapy (active listening, making legitimate demands, problem-solving and coping with stress) were trained by role-playing. After 6 and 9 months, the transfers of the learned techniques in every day life were discussed in booster-sessions.

All patients were assessed with the German version of the SOC scale and the German version of the Global Assessment of Functioning scale (GAF scale) at baseline, after three, nine and twelve months (27-28). The SOC scale is a self-rated instrument with 29 items rated on a seven-point Likert scale. Three sub scores cover the dimensions comprehensibility, manageability and meaningfulness; they were added to a total SOC score. The GAF scale is subjectively rated by clinicians and determines a patient's current functional status on a numeric scale from 1 to 100. It covers clinical, social and occupational factors.

The socio-demographic data and the AR before intervention were collected by structured interviews at T1. The AR was calculated as the quotient of number of hospitalizations and years of sickness. The AR was calculated again within the study period after one and after two years.

At T1, within the whole sample (PG plus CG), subgroups of patients with high and low SOC levels were built by median-splitting. Accordingly, four subgroups of patients (PG with high SOC level, PG with low SOC level, CG with high SOC level and CG with low SOC level) were created and used as independent variables. SPSS 15 was used for statistical analysis. All investigated variables were tested for Gaussian distribution by a Kolmogorov-Smirnov-test. Subject to normal distribution parametric or non-parametric tests were used. The baseline characteristics of the subgroups were compared by using Mann-Whitney U-tests or independent sample t-tests. To prove differences between the subgroups in regard to the dependent variables (AR and GAF), independent sample t-tests were used on all measurement points. Differences within the subgroups were proven by Wilcoxon-tests and dependent sample t-tests. By an analysis of variance, the effects of the PG compared to the CG were proven on the two SOC levels due to AR and GAF. The main effects were adjusted by Bonferroni-tests.

Results

From initially forty-six patients five patients dropped out in the PG between T1 and T2 due to different reasons (e. g. difficulties within the approach of the group sessions, personal reasons etc.) during the study period. So the long-term results are almost based on the data of 20 patients in the PG and 21 patients in the CG.

Comparison of PG and CG at Baseline

At T1 no significant differences between PG and CG occurred with regard to the socio- demographic data (see Table 1). Notably, most of the patients (80% in the PG and 66.7% in the CG) lived together with their families. All other patients had close connections to their family members or partners. By means, PG participants were younger (M = 34.2; SD = 11.27) than CG participants (M = 40.2, SD = 11.85); thus PG participants had been diseased since M = 6.3 years (SD = 7.58) and CG participants since M = 10.3 years (SD = 9.39). PG participants had clearly lower SOC scores than CG participants (M = 119.72; SD = 20.596 vs. M = 131.14; SD = 35.953; T = 1.348; p = .184).

No significant differences were found between PG and CG (M = .97; SD = .69 vs. M = .80; SD = .82; T = -.761; p = .451) due to AR (see Tab. 3). But PG participants had significant lower GAF scores than CG participants (M = 47.96; SD = 9.66 vs. M = 56.76; SD = 14.61; T = 2.445; p = .019).

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Table 1 Socio demographic data of the sample

Variables	PG (*n* = 25)		CG (*n* = 21)		p
Age					0.084
in years M (SD)	34.2	(11.27)	40.2	(11.85)	
Sex					0.808
Male	14	(56.0%)	11	(52.4%)	
Female	11	(44.0%)	10	(47.6%)	
Marital status					0.285
Unmarried	17	(68.0%)	16	(76.2%)	
Married	8	(32.0%)	5	(23.8%)	
Level of education					0.271
Primary school	8	(32.0 %)	8	(38.1 %)	
Secondary school	7	(28.0 %)	9	(42.9 %)	
High School	10	(40.0 %)	4	(19.0 %)	
Occupation					0.302
Employed	11	(44.0%)	8	(38.1%)	
Day care center	4	(16.0 %)	2	(9.5 %)	
Housewife/-man	6	(24.0 %)	9	(42.9 %)	
Student	4	(16.0 %)	2	(9.5 %)	
Living conditions					0.285
Single	5	(20.0 %)	7	(33.3 %)	
Together with family	20	(80.0 %)	14	(66.7 %)	
Diagnosis					0.452
Schizophrenic Psychosis (F 20)	17	(68.0 %)	12	(57.1 %)	
Schizoaffective Psychosis (F 25)	8	(32.0 %)	9	(42.9 %)	
Course of disease					0.128
in years M (SD)	6.3	(7.58)	10.3	(9.39)	

Abbr.: PG = Psychoeducational multi family group; CG = Control group; M = Mean; SD = Standard deviation
Statistics: Mann-Whitney U-test, independent samples t-test

Comparison of patients with high and low SOC levels at baseline

With regard to socio-demographic data, no significant differences were found between patients with high and low SOC levels, but by means, patients with high SOC levels were employed more frequently (56.5 % vs. 26.1 %) than patients with low SOC levels.

Significant differences between these two subgroups were found due to the AR and GAF scores. Patients with high SOC levels had a significant lower AR than patients with low SOC levels (M = .63; SD = .435 vs. M = 1.15; SD = .91; T = 2,501; p = .016) and also significant higher GAF scores (M = 57.78; SD = 12.93 vs. M = 46.17; SD = 9.92; T = -3.417; p = .001).

Comparison of PG and CG due to AR and GAF after intervention

The PG showed a significant decrease in AR (Table 2) and a significant enhancement of GAF scores (see Table 3) after intervention, while the CG had neither a significant enhancement nor a significant decrease of AR and GAF scores on all measurement points. In the PG the AR was reduced to 42% after one year and to 57% after two years. Additionally, the GAF scores were enhanced to 33% after one year in the PG.

The influence of SOC levels and intervention on AR

An analysis of variance with repeated measurement showed a marginal significant effect of test intervals (F2.36 = 3.024; p = .061; CHI-2 = .144; N = 41) and a marginal significant main effect of SOC levels (F1 = 3.541; p = .068; CHI-2 = .087; N = 41) on the AR. But no significant main effect of intervention on the AR was observed (p = .221). The pair wise comparison of test intervals showed no significant difference between T1 and T2, but marginal significant differences between T1 and T3 (p = .051) and significant differences between T2 and

Table 2 Changes in AR of PG and CG between T1 and T4; T4 and T5

	PG				CG			
	M	SD	Z	p	M	SD	Z	p
T1	0.97	(0.69)			0.80	(0.82)		
			1.835	0.067			-0.131	0.896
T4	0.55	(0.82)			0.90	(1.41)		
			2.637	0.008			-0.174	0.862
T5	0.40	(0.52)			0.76	(1.06)		

Abbr.: AR = Admission rate; T1 = Baseline; T4 = after one year; T5 = after two years; PG = Psychoeducational multi family group; CG = Control group; M = Mean; SD = Standard deviation
Statistics: Wilcoxon-test

Table 3 Changes in GAF of PG and CG between T1 and T2, T2 and T3, T3 and T4

	PG				CG			
	M	SD	T	p	M	SD	T	p
T1	47.96	(9.65)			56.76	(14.60)		
			-3.593	0.002			-0.434	0.669
T2	56.45	(10.55)			57.33	(14.51)		
			-5.597	0.000			-1.435	0.167
T3	61.25	(10.00)			58.90	(14.20)		
			-5.867	0.000			-0.943	0.357
T4	63.80	(11.70)			58.57	(14.94)		

Abbr.: GAF = Global functioning; T1 = Baseline; T2 = after 3 months; T3 = after 9 months; T4 = after 12 months; PG = Psychoeducational multi family group; CG = Control group; M = Mean; SD = Standard deviation
Statistics: dependent samples t-test

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T3 (p = .037). Additionally, the pair wise comparison between the AR of patients with high and low SOC levels showed a significant difference (p = .034).

A comparison by means (see Table 4) showed that patients with a high SOC level in the PG, as well as in the CG, had no significant difference due to AR after one and two years compared to baseline. In contrast, patients with a low SOC level in the PG could reduce their AR significantly after one year (minus 61%) and also after two years (minus 77%) compared to baseline, while patients with a low SOC level in the CG had a higher AR after one year (plus 10%) and a slightly reduced AR (minus 4%) after two years.

The influence of SOC levels and intervention on GAF

An analysis of variance with repeated measurement showed a significant effect of test intervals (F3.36 = 10.403; p = .000; CHI-2 = .464; N = 41) and a significant main effect of intervention (F3.36 = 4.328; p = .011; CHI-2 = .265; N = 41) on GAF. The level of SOC showed no significant effect due to GAF (F3.36 = .715; p = .549; CHI-2 = .056; N = 41). The pair wise comparison of test intervals showed significant differences between T1 and T2 (p = .015), T1 and T3 (p = .000) and T1 and T4 (p = .000).

Table 4 Comparison by means between subgroups at T1, T4 and T5

	PG SOC low		PG SOC high		CG SOC low		CG SOC high	
	M	SD	M	SD	M	SD	M	SD
T1	01.15	(0.81)	00.57	(0.33)	01.29	(1.15)	00.50	(0.30)
T4	00.54	(0.87)	00.57	(0.78)	01.50	(2.07)	00.54	(0.66)
T5	00.38	(0.58)	00.43	(0.44)	01.06	(1.34)	00.57	(0.86)

Abbr.: AR = Admission rate; T1 = Baseline; T4 = after one year; T5 = after two years; PG = Psychoeducational multi family group; CG = Control group; M = Mean; SD = Standard deviation

Table 5 GAF comparison by means between subgroups at T1, T2, T3 and T4

	PG SOC low		PG SOC high		CG SOC low		CG SOC high	
	M	SD	M	SD	M	SD	M	SD
T1	47.62	(10.82)	52.00	(7.61)	46.50	(8.12)	65.41	(14.27)
T2	56.07	(11.06)	57.14	(10.35)	47.50	(10.33)	65.75	(13.59)
T3	61.31	(10.18)	61.14	(10.46)	50.62	(10.33)	66.41	(14.15)
T4	63.08	(12.28)	65.14	(11.33)	52.12	(12.88)	64.83	(15.16)

Abbr.: GAF = Global functioning; T1 = Baseline; T2 = after 3 months; T3 = after 9 months; T4 = after 12 months; PG = Psychoeducational multi family group; CG = Control group; M = Mean; SD = Standard deviation

Again, a comparison by means (see Table 5) showed that at T1, PG participants with high SOC levels had significant lower GAF scores than CG participants. But after one year, PG participants with high SOC levels could enhance their GAF scores from M = 52 at T1 to M = 65 at T4 (plus 25%), while CG participants with a high SOC level had no significant difference due to GAF scores between T1 and T4 (M = 65 vs. M = 64). PG participants with low SOC levels could enhance their GAF scores from M = 47 at T1 to M = 63 at T4 (34%), while CG participants with low SOC levels had a slight enhancement of GAF scores from M = 46 at T1 to M = 52 at T4 (plus 13%).

Discussion

The given results have some methodological limitations. All patients who joined the study lived with their families or had close connections to them, so the results might only be representative for this certain subgroup of patients suffering from schizophrenia. Indeed, the effects of the multi-family intervention with regard to changes in attitude, way of communication and family climate were investigated by open questions, but the results of this enquiry were not available for this article yet. Additionally, the comparability of PG and CG was limited by the fact that PG participants had significant lower GAF scores before intervention than CG participants. This difference might be due to the possibility that patients could choose to participate either in the PG or in the CG. It seemed that patients with a lower level of psychosocial functioning were more motivated to participate in a PG because they might have hoped to enhance their state of health or their course of disease through such an intervention. The comparability of the results from the PG and the CG indeed has a confinement, but the study describes conditions of a real setting in a clinical practice (high ecological validity).

According to former studies (8, 9, 10), the results showed that the patients had a clear profit from multi-family intervention. Obviously, this profit was influenced by the patients' level of SOC. Already before intervention, patients with a high SOC level had a lower AR and higher GAF scores than patients with a low SOC level. These findings support the general hypothesis that SOC is a good predictor for different clinical outcomes (18, 20). Furthermore, in this study we considered that the SOC might had worked as a moderator variable within the patients in the PG as well as in the CG. Patients with a high SOC level seemed to dispose of better personal resistance resources and therefore had a comparable lesser profit from the intervention than patients with a low SOC level.

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After intervention, a significant influence of SOC was found in the PG due to AR and also to GAF. Patients with a high SOC level had nearly the same comparably low readmission rates at a two year follow up compared to their AR at baseline. These findings were independent from whether patients participated in the PG or in the CG. But especially patients with a low SOC level had the greatest and most significant profit from their participation in a PG. They could reduce their AR about 61%, respectively, 77% to the same level as patients with a high SOC level. This profit was considerably higher than the profits in comparable studies which did not consider moderating variables in their samples (8, 10). In contrast, no significant changes in the AR within patients with a low SOC level in the CG were observable in the same period; overall, this subgroup had the highest admission and readmission rates within the sample.

The influence of SOC on GAF was similar but inverse to the AR. Patients with a high SOC level in the CG started with a comparable high GAF score. Within a one year period, they constantly showed the highest GAF scores compared to all other patients in the sample, while patients with a low SOC level in the CG constantly showed the lowest GAF scores. The greatest progress of GAF scores (plus 34%) was found within the PG participants with low SOC scores. This subgroup started on the same comparably low GAF level as the patients with low GAF scores in the CG. But they could enhance their GAF scores to nearly the same level as CG participants with a high SOC level within a one year period. This enhancement might be considerably supported through their participation in a PG.

Finally, the results led to the assumption that, beside the SOC as a coping style, also the multi-family intervention had an influence on the explored outcomes. However, the SOC seems to have a stronger influence on the AR than the multi-family intervention. Although the observed effect sizes are quite small, the effect sizes of SOC were stronger than the effect sizes of the intervention (CHI-2 = .093 vs. CHI-2 = .039). Whereas PG participants with high SOC scores could profit from their way of coping and might have activated their previous resistance resources, PG participants with a low SOC level had obvious benefits from the intervention.

Vice versa, the multi-family intervention seems to have a greater influence on the GAF than the SOC. Here, the effects are similarly low, but the intervention tended to show a stronger effect on GAF than the SOC. As well, PG participants with high and low SOC scores could enhance their GAF scores significantly, against which no significant changes due to GAF scores were observable within CG participants with high and low SOC levels.

Of course this study had the confinement that the given results were based on a small sample size. Further research on related constructs should be performed in clearly bigger samples. But overall, patients with low SOC scores seemed to have the greatest benefit from the PG concerning both observed variables. Therefore, the potential implication for clinical practice concerns pre-selection of patients with a low SOC level for psychosocial interventions and especially for multi-family interventions.

Contribution Details

All authors read and met the ICMJE criteria for authorship and agree with the results and conclusions. WG designed the study. OC and WG analysed the data. WG and HB collected data. WG and OC wrote the first draft of the paper. HB contributed to the writing of the paper. WG and OC contributed to the interpretation of the data. WG, HB and OC contributed to the discussions of the design and interpretation of the study.

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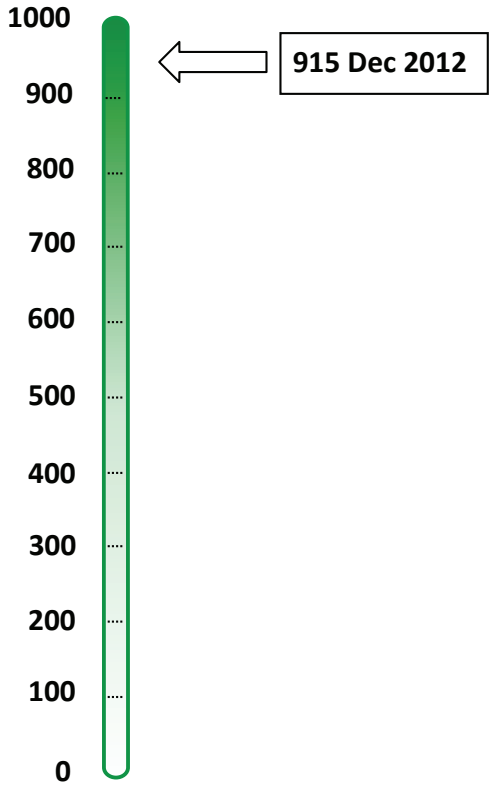
HPH Member update



The International HPH Network now totals 915 members

The growth-related goal of the Global HPH Strategy 2011-2013 is to reach member number 1000 in 2013.

If your hospital or health service is interested in joining the International HPH Network, go to HPHnet.org and find more information about what HPH can do for your organisation and why health promotion in Hospitals and Health Services is vital for the improvement of health for patients, staff and community.

In the 'Members' section at HPHnet.org you will find all information required for membership.

For further questions about the HPH Network, feel free to contact the secretariat: info@hphnet.org.